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SMALLPOX IN SPANISH AND MEXICAN CALIFORNIA 1770-1845

S. F. COOK

From the Division of Physiology, University of California Medical School, Berkeley

The history of smallpox in early California has been touched upon by numerous authors since the work of Bancroft but as a rule in only a cursory manner.[1] Little attempt has been made to bring together the documentary material, and indeed certain of the more important sources have never been published. The present study undertakes to fill this gap in the history of epidemiology and medicine and also to emphasize certain rather unusual features of the situation on the Pacific Coast. During nearly three quarters of a century, from approximately 1770 to 1830, California, through a

[1] The most important modern accounts which deal with this subject are those of Bancroft, Lyman, and Harris: Bancroft, H. H., *History of California* and the *California Pastoral*; Lyman, G. D., *The Scalpel under Three Flags*, Calif. Hist. Soc. Quart., Vol. 4, pp. 142-206, 1925; and Harris, Henry, *California's Medical Story*, San Francisco, 1932. The references to smallpox in Bancroft's main work are documented with the exception of certain statements in the Pioneer Index, but the Pastoral contains considerable material concerning which no citation of sources is given. Lyman in his account depends very largely upon Bancroft, as does Harris. Both these authors covered their field very adequately but neither was primarily interested in smallpox as such.

combination of circumstances, escaped any serious visitation of smallpox, while at the same time other parts of the new world suffered seriously. This relative immunity may be ascribed to three factors: the extreme isolation of the region, the active preventive efforts on the part of a paternalistic government, and the introduction of vaccination at a relatively early phase of the country's development. It is particularly the second and to some extent the third of these factors which will be considered in the following account.[2]

California was opened up to civilization by a small number of persons,—missionaries, soldiers and civilians—who were carefully selected and thoroughly examined before departure. Thus the danger of introducing smallpox at the beginning was greatly minimized. During the course of subsequent settlement all new colonists were known to the government. Shipping was carefully controlled and limited by statute to certain vessels of Spanish registry. Not until quite late did foreign traders appear in any number and even then the maximum precaution was exercised to prevent introduction of communicable diseases. Finally it was not until the early nineteenth century that outsiders began to penetrate the remote coast by way of the land route in the face of natural obstacles and the uniform policy of isolation adopted by the local authorities. These factors all operated to reduce to a minimum the chance of fortuitous introduction of smallpox.

The earliest reference to a possible epidemic which I have discovered was in 1781, twelve years after the Serra-Portola expedition of discovery. This is contained in two letters by Governor Neve.[3] The first mentions the presence of smallpox in Loreto, Lower

[2] In view of the fact that the original documents dealing with smallpox prevention have never been published *in extenso*, although summaries and excerpts have been given from time to time, it is deemed advisable here, even at the risk of unduly prolonging the text, to set forth such documents in full. Some of these items pertain to Mexico and Spanish America as a whole and to California only in that the latter was a part of larger jurisdiction. As such they are appropriate to the present subject. On the other hand, there is a great deal of material, covering three centuries, concerning Mexico, which can not be considered here since it did not directly touch California.

[3] Neve to Comandante General, San Gabriel, July 13 and Oct. 29, 1781, Cal. Arch. Prov. Rec., Vol. 2, p. 89.

California. In the second, Oct. 29, he wrote concerning certain settlers who had just arrived, probably by way of Loreto, that:

> ". . . having arrived at this mission (San Gabriel) on August 18, Lieut. Jose Zuñiga took measures that the recruits, the settlers and their families under his command should go into camp at one league distance because some infants were present who had recently recovered from smallpox. From the camp they proceed to settle on the land on which the Pueblo of Los Angeles is being founded . . ."

Apparently the new Pueblo and the Mission Indians were spared an epidemic at this time.

Five years later, no smallpox having appeared in California in the meantime, the matter was given official attention in a letter from the Comandante General Ugarte y Loyola who transmitted to Gov. Pedro Fages a Royal decree or cedula. These Royal cedulas concerning sanitation and hygiene apparently were of somewhat frequent occurrence and illustrate the methods whereby the health of the community was to be preserved. The measures advised usually were those recommended by the most advanced physicians of the time and if their enforcement left a good deal to be desired this was due to the inherent difficulty of administering drastic legislation among an ignorant and backward people. This was particularly true in the colonies of decadent Spain where the central authority was at best feeble and where the actual administration of an edict devolved upon minor officials of the most diverse qualifications.

The Ugarte y Loyola letter is as follows:[4]

> Chihuahua, Sept. 15, 1786
>
> Governor Fages:
>
> His Excellency the Marquis of Sonora has communicated to me under date of Sept. 4 the following Royal Order.
>
> "I am sending to your Lordship the attached dissertation concerning the method of protecting the population from smallpox, even to the extinction of the latter, which the King has ordered published by the Secretariat of my jurisdiction. Once

[4] Cal. Arch. Prov. St. Pap., Vol. 6, pp. 80-83.

your Lordship is informed of its contents, His Majesty desires that you bring to the attention of the communities under your command, by means of the respective parish priests and physicians wherever they may be, and by any others whom you regard as appreciating the importance of this benefaction, the devotion of the King to the welfare of his subjects in America together with the usefulness and absolute safety which will attend the execution of these measures.

"According to the prologue of the above mentioned publication, notable success has been achieved in the Province of Louisiana by the precautions set forth on page 57 and following. Accordingly, as soon as an invasion of smallpox manifests itself in the towns of your jurisdiction, you will take steps to transfer the first victim and those who succumb later to a hermitage or country home which you will have designated or will have caused to be constructed at an appropriate distance from the town. This shall be in a healthy location but shall be situated so that the prevailing winds in the region can not communicate the contagion to the villages and farms of the vicinity, although according to the general opinion of professional men and according to repeated experience this pestilence is propagated only by contact with the victims or the houses in which they are treated.

"In order that heads of families shall not withhold their cooperation in ensuring the success of an enterprise so vital to public and private safety your Lordship will distribute copies of this pamphlet among the most suitable of your subjects. You will also make other appropriate dispositions to inform the public in advance of the advantages and conveniences offered by this Royal resolution. All the inhabitants may thus lay aside unfounded misgivings and suspicions prejudicial to themselves and as a rule deleterious to the most useful and carefully conceived measures. Your Lordship will also endeavor to make certain that the isolated smallpox patients shall be attended not only professionally but in all other respects with the greatest gentleness, humanity and care, in accordance with the methods prescribed in the pamphlet for the purpose of avoiding contagion in the community.

"In this matter, the accomplishment of which will merit the appreciation of the King and will assure to those who cooperate in its execution the royal gratitude and good will, your Lordship will proceed with the prudence, circumspection, patience and caution which is required for its success and will advise me as to the results for the information and satisfaction of his majesty.

"I am sending it (the Royal Decree) to your Lordship for your information, accompanied with 20 copies of the above mentioned dissertation so that in consequence of this and of the provisions of the Royal Decree you may put in force these measures in the district under your command. Thus the pious and sovereign desires of the King may become effective in protecting the people from smallpox infection and your Lordship may render a report of the observed results in order to inform his Majesty."

Ten years passed following the edict of 1786, during which no mention is made of smallpox in the official or other documents bearing on California. During this decade considerable progress was made in other parts of the world toward the final solution of the problem, progress which was epitomised for California and northern Mexico by the decree of 1797 (see below). The decree of 1786, as will be noted, offered as a prophylactic measure nothing essentially new. It stressed the procedure of a strict quarantine, an ancient and well tested measure. However, during this decade the method of inoculation came into more general use in Spanish America.[8] Previously its value had been known to the official and clerical ranks and attempts had been made to introduce it in Mexico, although as far as I am aware not in California. The slow progress was undoubtedly due to the passive resistance of the ignorant and half savage population and to ineffective administrative support. It is clear from the tenor of the decree of 1797 that great opposition had been encountered.

[8] Inoculation or variolation had been known and employed for many years, certainly since the early 18th century. For details concerning its use in Europe and British North America reference may be made to such works as F. R. Packard, *History of Medicine in the United States* (1931), and F. H. Garrison, *An Introduction to the History of Medicine* (4th ed., 1929).

On February 28, 1797, just a year prior to Jenner's first publication concerning vaccination, Viceroy Branciforte promulgated an edict, a copy of which he sent to Borica, then Governor of California. The edict was motivated by a severe epidemic in southern Mexico and Guatemala, and Branciforte was making a strong effort to prevent its spread into other portions of the country. In view of its general importance and because of the unusually clear picture it gives of the administrative, sanitary and social problems confronting the community, it is here reproduced in full.[6, 7]

> " The endeavor, as a result of my strict regulations, to curtail and suppress, or at least to avoid the propagation of the terrible disease, the smallpox which, arising in certain towns of the province of Guatemala, appeared within the confines of this (province) and that of Oajaca, has been successful inasmuch as since June 9 of the year 1795, in which the first smallpox victims were discovered in the jurisdiction of Tehuantepec, the epidemic has been confined within very narrow limits. In fact, during the considerable time which has since elapsed there have been infested only the regions mentioned and some towns in the provinces of Chontales, Nexapa, Huamelula and Teutilan.
>
> " This good result has been due to the vigilance and efficiency which, in conformity with my urgent and repeated orders, has made it possible at last, in spite of many obstacles, to secure the treatment of the first victims in segregated places, the interment of corpses in distant cemeteries, the prohibition of all communication with the infected towns, and recently inoculation—for, since in some places the afore-mentioned methods for curtailing the epidemic were not as successful as in others, this operation has been introduced and practised voluntarily and felicitously.

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[6] Translated by the present writer from a transcript (Bancroft Library) in Cal. Arch. Prov. St. Pap., Vol. 15, pp. 227 ff.

[7] Borica acknowledged receipt of the instructions on July 20, 1797 (Cal. Arch. Prov. Rec., Vol. 6, p. 94) and transmitted them to his company commanders, as well as the Father President Lasuen (Cal. Arch. Prov. Rec., Vol. 6, p. 193). Argüello, the Commandant at San Francisco replied that he would send copies to all missions and garrisons and if the disease arose he would have his family inoculated first of all as an example to others (Cal. Arch. Prov. St. P., Vol. 17, p. 104).

"Nevertheless, in spite of my continual vigilance, the smallpox has unfortunately spread in Oajaca, and it will not be strange if the same thing begins to happen in other sections nearer to this capital. For this reason it has seemed to me necessary to establish new and more rigorous precautions with respect to the state of the disease in this city (Mexico), it being of the greatest importance to do this before the disease begins to appear in other towns and spreads and propagates itself. As to the regulations which appear to be suitable and adapted to the situation, although I assume that the principal measures which have already been adopted are generally familiar, I will recapitulate them, and will add others no less essential, which after consultation with and previous advice from the Royal Medical Board, Civil Treasury officers, and Assessor General, I have set forth in the following terms:—

1. In all towns there shall be designated and provided a building adapted to the number of patients, situated in a somewhat remote spot and facing the wind which prevails in the region. This is so that as soon as smallpox patients can be taken there without risk, given nursing with ease, and be provided with all necessaries, there shall be removed to it without delay nor any exception, no matter who he is, everyone who is infected. And the patients, as well as their permanent assistants, shall be treated there in absolute separation from the town.

2. With the above important end in view, almost the only known method of restraining this terrible disease, the priests, religious prelates, physicians and subordinate judges shall immediately report every smallpox victim who comes to their notice to the magistrate or principal judge in order that he may instantly arrange for his (the victim's) removal to the above mentioned building.

3. In order to facilitate (the above procedure) these judges shall have ready a plan for dividing the town under their authority into blocks, or subdivisions, which they shall place in charge of subordinates, municipal officers or responsible citizens. This is in order that the latter, traversing frequently their districts,

can find out with ease and discretion what smallpox victims there are in them, can persuade and convince the interested persons concerning the usefulness and necessity of removal, and may secure their apprehension without violence.

4. With the first signs which appear of a serious epidemic, communication is to be prevented between the affected region and those which are not affected, placing for the purpose guards in the sentry-boxes, on the roads, trails, and spots which seem appropriate. It should not be neglected, in the unexpected case that the above precautions are inadequate, to establish a *cordon* which will not leave open the slightest means of communication.

5. It (communication) may be had solely in conjunction with the quarantine which must be observed, no person excepted, by whoever goes out of or has crossed through the infested region. Also subject to the same indispensable measure are the freight and goods which are being transported from that region.

6. If the regrettable situation arises where it becomes necessary to put into effect the measures prescribed in the two preceding paragraphs it shall be arranged that at the entrances and exits of the towns and villages, not only those infested but those adjacent, and on the respective highways, bonfires shall be kept burning day and night of logs, shrubs, hay and other similar combustible materials, in order to purify the air. But this shall be done in a manner such that no injury or damage to crops or real property shall result, and it shall be under the responsibility of the same judges.

7. The letters which are sent out from the contaminated regions shall be fumigated with sulphur. Before packing them they shall be wrapped in damp paper similarly fumigated. The messengers shall put on linen clothing which they shall take off before entering any town, even if it be untouched by the epidemic.

8. When the latter (the epidemic) becomes widespread, because of inability to stop it at the beginning by the appropriate methods indicated, it will be desirable to put inoculation into practice, pointing out to those concerned, in order that they

may adopt it voluntarily, its advantages and the great success constantly obtained in Oajaca, Tehuantepec and other towns, where the results have been exceedingly favorable to mankind. The house or provisional hospital should then be enlarged to receive and treat poor persons who have been inoculated, or to inoculate those who, although they desire it, shall decline to be inoculated on account of their great poverty. In order that this operation may be performed according to proper instructions, I have also ordered that the Royal Medical Board formulate a clear, simple, methodical, and comprehensive (statement) of the preparation and subsequent treatment, such that it may be easily understood and followed. To this end it will be circulated, as soon as it is finished, together with another, which will accompany it, concerning the ordinary method of treating common smallpox.

9. If, because the epidemic is found to be widely disseminated and is considered to be general in nature, the above mentioned building is inadequate, and if the regrettable situation arises where it is necessary to have recourse to the other procedures already set forth, then the authorities will be obliged to organize charitable societies of men and women separately, consisting of all persons who are able to contribute their alms to the unfortunate victims of their respective sexes and localities, to devote themselves to their care and assistance, and to collect the donations which are made voluntarily by other citizens without known wealth. Since those of the latter class (the poorer) live ordinarily in the outskirts and suburbs and consequently there are as a rule more needy than wealthy persons in these districts or subdivisions, each of them should be joined to another subdivision in the principal part of the town, so that the citizens of the latter may come to the aid of those of the former and make them the worthy object of their pity and charity. It is to be expected certainly that the same system will be put in practice by the Illustrious bishops in so far as it concerns their clergy by means of the parish priests in the large cities and the towns, in order that in this way all the classes of the State, as interested persons, may contribute to the

relief of humanity and cooperate for the restoration of public health.

10. Of no less concern is the burial of those who succumb to the contagion, for of such a quality is its activity and penetration that in order to avoid its noxious effects it is necessary that the corpses be buried outside of the churches and their regular cemeteries, in places removed from all contact. For this purpose, when it shall be necessary, the Illustrious bishops and the parish priests shall arrange, after consultation with the judges concerning sites and expenses, for the establishment of grounds or cemeteries, so that there may be no embarrassment with respect to their use if an epidemic should occur.

11. Nevertheless, aside from the precautions here described or such others as human wisdom could suggest, nothing will be able to assuage or mitigate the cruel scourge of such a terrible disease more than fervent prayers to God, His Holy Mother, and His Saints, imploring their mercy and protection by public and private supplications. It is to be believed that this will be directed by the Illustrious bishops and the parish priests as soon as they perceive the affliction among their flocks and parishes.

12. When for the execution of some of the measures here set forth, it may be necessary to expend funds, the judges, provided the emergency does not permit them to consult this superior authority (the situation having arisen where it is absolutely essential and where there are no other economic means such as subscriptions, contributions, legacies, etc.) may draw upon public funds and community property. This is with the distinct requirement that the urgent and unavoidable expense be determined beforehand, that the expenditures be made with the most rigid economy and with due process of municipal law, and that the amount removed from the community property be attested by sworn documents under the supervision of the parish curates.

13. Notwithstanding all the preceding, if the magistrates, Illustrious bishops, curates, justices, physicians and other persons to whom this is addressed, should think of other methods,

aside from those here described, for facilitating the segregation of the sick and the curtailing of communication, as well as for supplying means to meet the common need without prejudice to the public funds, let them bring them to my attention as opportunity offers, in order to adopt those which may be desirable, or to make use of the suggestions they contain for the improvement of my measures and their more complete application and success. I do not doubt that you (i. e. Borica) will do everything which may be possible, in so far as this matter concerns you; acting with appropriate judgment and discretion, so as not to alarm the townspeople, and so as neither to proceed inopportunely with these measures, nor, on the other hand, to delay those which may be demanded by the critical circumstances which always accompany the terrible disease smallpox. I remain convinced that in a situation of such gravity you will use vigilance in the interests of humanity and the public welfare, in order to avoid the evils which threaten, and equally you will use zeal in alleviating or assuaging their pernicious effects and lamentable consequences."

The year following the promulgation of the decree there arose an opportunity to practise its provisions in California. This incident, although actually of trivial importance, nevertheless demonstrated the value of the official regulations. It also is highly illuminating as an example of the difficulty in enforcing such regulations even in a community so rigidly supervised as California.

In early May, 1798, Gov. Borica received word that the ship *Concepcion* was arriving on the coast with several cases of smallpox on board. This was the regular ship from San Blas which carried freight and passengers between California and Mexico. On this trip smallpox had broken out and five persons were infected.[8] In accordance with the orders issued the previous year, Borica notified all Presidio commanders and advised inoculation.[9] Specifically he wrote to Capt. Goycoechea of Santa Barbara, where the ship was

[8] Borica to Matute, Monterey, May 28, 1798, Cal. Arch. Prov. St. P., Vol. 21, p. 280.

[9] Cal. Arch. Prov. Rec., Vol. 4, p. 165, May 14, 1797.

expected to put in, giving detailed orders. These may be summarized as follows:

1. The people on land are to be prevented from coming in contact with the ship by means of sentries stationed on the beach.

2. All papers delivered by the captain of the ship or other persons are to be fumigated with sulphur.

3. Barracks are to be constructed immediately to house Alferez Manuel Rodrigues, Francisco Gomez, and the clergymen, together with the other passengers and their baggage.

4. The officer, clergymen, and others shall be given sustenance for forty days while they remain in quarantine. To secure that no one approaches from the shore a guard shall be posted.

5. The removal of material from the ship shall be done only by the crew, carts and oxen being furnished to them, and subsequently all containers shall be burned.

6. Alferez Rodriguez shall be commissioned to open the mail, and in the presence of official witnesses fumigate it with sulphur.

7. If, after forty days, there are no new cases of smallpox the persons concerned may proceed to their destinations and the mail may be delivered.

8. Finally, these precautions if scrupulously adhered to will suffice to protect the country from the scourge of the disease.

For reasons which are not wholly clear Goycoechea was anything but energetic in the performance of his duty. He made some attempt to impose a quarantine but the pressure on the part of those concerned was evidently great. In any case the quarantine was quite soon lifted, if even it had ever been in force. Some justification to the Governor was necessary and evidently the persons concerned sent a memorial to Borica, accompanied by a letter from Goycoechea. Borica was highly indignant with such disobedience and wrote Goycoechea the scathing letter translated in full below. The incident shows how difficult it was to enforce even a simple quarantine contrary to the selfish personal desires of influential citizens.

Borica's letter to Goycoechea is as follows:[10]

[10] Borica to Goycoechea, Monterey, May 28, 1797, Cal. Arch. Prov. Rec., Vol. 4, p. 102.

"I have received yours of the 25th, together with the document signed by all the officers of the Presidio, Alferez Rodriguez, the officers of the ship *Concepcion*, its chief pilot and the eight clergymen destined for these missions. Having examined the reasons adduced for raising the quarantine so wisely prescribed by his Excellency the Viceroy Marquis de Branciforte in his circular of Feb. 28, 1797 (of which I sent you two copies) I do not find them adequate. For the humiliation of the clergymen and others on confinement to barracks and the possible damage to some of the baggage and papers in case of rain—these annoyances are insignificant in comparison to the devastation which might be caused by the smallpox carried in the ship, if it unfortunately managed to spread as a result of such unwise procedures and disobedience to command. You should not have permitted the quarantine to be lifted, nor any communication to be held between those on land and those aboard ship, nor should you have allowed Indians from the mission to assist the Reverend Fathers because the latter and other persons could have obtained aid from the crew or have given each other mutual help in the common necessity.

"All this has arisen from your failure to reflect soberly concerning measures to be taken in anticipation of such an eventuality.

"Obeying to the letter my and His Excellency's orders you should do your duty. On the contrary, all the signatures in the world will not absolve you from the just accusations which will follow, even though the smallpox does not spread, and if this disaster does befall us, the Viceroy, informed of all that has occurred in the affair, will be pleased to take such steps as he shall deem appropriate.

"Considering now that the clergymen are already at the mission and the letters in the storehouse, the former may proceed to the points designated by their prelate carrying with them the letters to their destination."

On the same day Borica wrote Matute, captain of the *Concepcion* that "Goycoechea because he did not receive the orders of the viceroy concerning the quarantine of ships" had allowed the ship to land

and that he, Matute, should transfer the smallpox patients after burning their clothes and personal effects.[11] Apparently Borica was covering up Goycoechea's misdemeanor in communicating with the subordinate officer, Matute. He was however, quite outspoken in writing the Father President Lasuen with respect to the part played by the new missionaries, for [12] he "complained that the measures of the Viceroy against smallpox had been deceitfully (*bajo cuerda*) evaded by the clergymen who did not wish to respect the quarantine and he held Lasuen responsible if this disease succeeded in spreading."

The final report sent to the Viceroy by the Governor [13] on July 23 was quite noncommital, stating simply that "on May 3 the ship *Concepcion* arrived with 9 clergymen for the missions of New California, and they remained on board in quarantine for smallpox until May 16." This letter, incidentally, places the actual length of quarantine at 13 days and makes it quite definite that the people concerned remained on board, not in barracks on shore. It also omits all mention of Goycoechea's actions.[14]

While the Borica-Goycoechea controversy was going on the former circularized all his Presidial commanders,[15] stating that the ship *Concepcion* had arrived with smallpox and "that vaccination should be administered." Letters acknowledging receipt of these instructions are extant from Francisco de Argüello [16] and Pedro de Alberni,[17] both of San Francisco. These officers promised close cooperation.

As pointed out above, the *Concepcion* affair illustrates clearly how

[11] Borica to Matute, Monterey, May 28, 1798, Cal. Arch. Prov. St. P., Vol. 21, p. 280.

[12] Borica to Lasuen, May 28, 1798, Cal. Arch. Prov. Rec., Vol. 6, p. 214.

[13] Borica to the Viceroy, Monterey, July 23, 1798, Cal. Arch. Prov. Rec., Vol. 6, p. 127. The letter is dated 1799 in the Transcript of the Bancroft Library. This must be an error for 1798.

[14] It may be mentioned that Goycoechea suffered no penalties as a result of his infraction of discipline because not long afterwards he was appointed Governor of Baja California.

[15] Borica to Comd. de Presidios, Monterey, May 14, 1798, Cal. Arch. Prov. Rec., Vol. 4, p. 165.

[16] Cal. Arch. Prov. St. P., Vol. 17, p. 95, May 26, 1798.

[17] Cal. Arch. Prov. St. P., Vol. 17, p. 92, May 31, 1798.

an enlightened policy on the part of even a fairly strong central government may be set at naught by the selfishness or indifference of some local interest or a single insubordinate official. It was indeed fortunate that no epidemic occurred and that Borica was able to write [18] later that year to the Viceroy that "smallpox has not been introduced into the peninsula (California)."

The discovery of vaccination by Jenner in 1798 gave a great impetus to preventive medicine generally. Not the least interested government was that of Spain, whose king and high officials saw in it a means for controlling the disease in the Americas. In 1803 the government organized an elaborate expedition to carry vaccine to the colonies and also to act as official propaganda agents to disseminate information concerning the new method. This expedition was under command of Francisco Xavier de Balmis, a court physician. On reaching the West Indies the expedition divided, one section proceeding to South America while the other visited Cuba and Mexico. The territory of the United States was touched only in Texas [19] but the influence of the expedition was felt in California. A letter was circulated among the clergy, calling attention to the purpose of de Balmis and enjoining all members of the Church to render what aid might be possible. This letter was sent in the form of an order from the Bishop of Sonora to the President of the Missions, Estevan Tapis, on Nov. 27, 1804, and is here reproduced.[20]

Culiacan, Nov. 27, 1804.

Hail Jesus

Copy of an order of the Bishop of Sonora, ordered to be transmitted by the Father President.

We Dr. Fray Francisco Rouset de Jesus . . . Bishop of Sonora, Sinaloa and the Californias . . . etc.

To the Father President Fray Estevan Tapis:

The indefatigable zeal which inspires the paternal loving kind-

[18] Borica to the Viceroy, Monterey, Sept. 4, 1798, Cal. Arch. Prov. Rec., Vol. 7, p. 102.

[19] See account in F. R. Packard: *History of Medicine in the United States*, Vol. II, p. 938.

[20] Sta. Barb. Arch., Vol. V, pp. 132-137.

ness of the King (God protect him) to seek by so many ways and means the betterment of his beloved vassals has caused to be sent to the New World, at the expense of the Royal Treasury a maritime expedition composed of capable persons and directed by the Physician of the Royal Person Don Francisco Xavier de Balmis. The purpose is to obviate in all the provinces of New Spain the most unfortunate ravages, which formerly have been caused and which it is feared may be caused at present by frequent epidemics of smallpox. This is to be done by means of vaccination which his Royal Grace is endeavoring to propagate in his extensive domain through the above mentioned expedition. With the intent to further the welfare of humanity he has prescribed wise and opportune procedures which can not possibly fail to produce the same salutary effects as have been experienced in all the kingdoms of Europe.

Beyond all measure are the sentiments of loyalty and gratitude which in conformity with such inspired beneficence we should feel in our souls toward the royal aspirations of our pious monarch. But since men in their ignorance pretend to curse what they do not understand, and since the public is prejudiced and at times makes false application of moral principles, we find that those who have the smallest comprehension of the matter are accustomed to spread over the country pernicious ideas which are capable of nullifying and disintegrating the most efficacious measures for the public welfare.

The keen perception of our beloved monarch has already foreseen this contingency and has applied the appropriate remedy, requiring that all prelates, ecclesiastics, priests and missionaries should charge their parishioners to use all means to eradicate in the minds of ignorant persons the dangerous and false ideas which many hold regarding the sure and well tried method of vaccination.

In order to comply with this Royal Order we have been awaiting, as the most opportune moment, the arrival in this country of the above mentioned expedition. Now that it is about to reach our shores, we perceive the necessity of advising your Reverence, in the pulpit as well as in private conversation, to persuade and convince your parishioners that they owe the

most humble recognition to the paternal vigilance of our Sovereign. Every official should emphasize to those within his jurisdiction not only the usefulness and benefit to them and their families inherent in this preventive measure but also the fact that due to its value to humanity and the general welfare it has been adopted without hesitation by all the nations which have been so fortunate as to learn about it. At the same time it should be explained to the heedless ones that vaccination is far from likely to bring on the disease when they do not actually suffer from it. In fact, although its application may not be compulsory, nevertheless it is at least a very wise precaution for avoiding the manifest danger of perishing in the general epidemics of smallpox, which inevitably, sooner or later attack all who have not already contracted it, men, women and children.

Even though this strict obligation is not recognized by every private individual, nevertheless there is no doubt that the priests and missionaries regard it as very important to avoid the dangers to which their respective parishes will remain exposed if they do not use this salutary treatment and enjoy the favorable results promised by its easy, certain and methodical employment. For as fathers and pastors of their spiritual flocks they ought in justice and charity to ward off the dangers which threaten their lives by availing themselves for the purpose of these modern methods.

Since it is in accord with your obligations to cooperate efficiently, to put in practise and make really effective the sovereign will of the king by aiding and assisting as much as in you lies the individuals and doctors who compose the charitable expedition already mentioned, now do I therefore charge you that you shall send this communication to all the missions of your jurisdiction for execution of its requirements and transcription in their records, that you retain the original in your archives and that you notify our private secretary when you have put these provisions into effect.

Given . . . in Culiacan, November 27, 1804, etc.

The question which now arises concerns the actual introduction of vaccination into California together with the first significant small-

pox cases. That the province had been spared the ravages of smallpox up to 1798 is fairly apparent from the Santa Barbara episode and Borica's statement of that year quoted above. However, Henry Harris [21] states that "The first vaccination, according to Governor Arrillaga's statement to Langsdorff, was made in 1786 with vaccine derived from cowpox in the Monterey district." The implication is, of course, that smallpox appeared in that region, otherwise vaccination (actually inoculation) would not have been undertaken. It is perhaps worthwhile to quote Langsdorff's own words concerning the matter, taken from his book: [22]

> "Gobernador Arrillaga (in 1806) imparted the important information that vaccination had been introduced into Mexico from Europe and that a surgeon there had already vaccinated a great many people. He assured me that for some time cowpox had been seen often in the country south of Monterey and that it had been successfully used for inoculation by many people. But since for more than twenty years smallpox had not appeared here, and people had therefore forgotten the dreadful devastations it had made, the precaution of vaccination was by many considered superfluous, and hence rejected. It may be remarked that this distemper among the cattle of California seems to manifest itself principally in the spring and abates when the grass is dried by the heat in June and July. I took special pains to find and observe the disease itself but did not succeed."

Bancroft [23] states that "in 1806 cowpox appeared in the cattle and inoculation was at first practised with considerable success but exemption from danger soon produced carelessness. . . . Vaccination does not seem to have been introduced until 1817 . . ."

From these statements, particularly the former, it appears safe to assume that smallpox was not present prior to 1806, but that in or before that year cowpox became manifest. Arrillaga's reference to vaccination concerns its introduction into Mexico, not California,

[21] California's Medical Story, p. 30.

[22] Langsdorff, G. H., 1814, *Narrative of the Rezanov Voyage to Nueva California in 1806*. Transl. T. C. Russell, San Francisco, 1927, p. 125.

[23] California Pastoral, p. 616.

and the dreadful devastations occurred undoubtedly in Mexico from whence most of the California settlers had come. It is to be noted particularly that Langsdorff, although he found cowpox, could find no evidence of the disease in humans.

No further reference to smallpox or vaccination appears in either the official correspondence or other primary sources until the year 1817. This complete silence may be taken as evidence that the disease did not appear during the interval, for had it done so, some reference would certainly be found in the voluminous documents of the period. Even at and after that date it is not wholly clear that any epidemic actually occurred.

The vaccination problem was troublesome for nearly a generation. Although it was recognized and recommended soon after its discovery in 1798 (cf. the documents cited above) difficulty arose in reconciling the inhabitants to its use and above all in getting proper vaccine material.

The first vaccine was brought, presumably to Monterey, by Jose Verdia [24] in 1817. Aside from the bare fact mentioned by Bancroft, little seems to be known of the circumstances. In 1821 the Russian surgeon Bacilio Merlin of the frigate *Rusa* brought some lymph to Monterey which he obtained in May at Lima and carried in glass flasks. On one day soon after its arrival the vaccine was used to vaccinate forty children of both sexes.[25] The number is given as fifty-four by Estrada,[26] of whom he says he was first to be vaccinated. A month later Governor Sola [27] wrote that the operation had been performed on more than ninety children but without effect, for the vaccine had lost its virtue. If this statement is correct, then a large proportion of the white children must have been immunized for the population of Monterey was quite small at the time.

The extreme difficulty in obtaining proper material was encountered not only in California but throughout Mexico and recourse was had to the old system of using human sources, specially children.

[24] Bancroft: California Pastoral, p. 632.

[25] Sola to Fathers at San Juan Capistrano, 1821, Cal. Arch. St. Pap. Sacr., Vol. 18, p. 35.

[26] Estrada, J., to de la Guerra, Monterey, August 28, 1821, de la Guerra Docs., Vol. 5, No. 188.

[27] Sola to Noriega, Monterey, Sept. 25, 1821, Cal. Arch. Prov. Rec., Vol. 11, p. 67.

The problem and some possible solutions were set forth in a decree emanating from the central government in 1823 through the Secretary of State Aleman, who addressed the following orders to the Governor of California.[28]

> " The Supreme Executive Power has directed his attention to the conservation and propagation of the vaccine fluid, noting with considerable anxiety that a preventative so efficacious against epidemics of smallpox has almost disappeared from our midst. The Municipal Councils, Provincial Deputations and Political Leaders (*Jefes Politicos*) are responsible for the public health. These authorities are charged with the encouragement of the propagation of so precious a fluid. Therefore in order that the inhabitants may guard against the said plague His Highness desires that you proceed at once, on conjunction with the Provincial Deputation and the Board of Health, to obtain vaccine from the nearest sources. We have even been advised that it may be preserved by transporting in thin gut containers or glassware. If such means do not suffice, then vaccinated children should be sent from one place to another at the expense of the respective municipalities. The Political Leaders should arrive at an agreement among themselves as to when the vaccine shall be distributed from one province to another, and once acquired, it (the vaccine) should be conserved and administered publicly under the inspection of the local Boards of Health and furnished to the requisite number of children in proportion to the population except in cases of epidemic, when it should be supplied to all.
>
> " You will also endeavor to accord this benefit to the farms and villages, urging the fathers and heads of families to submit their children to vaccination, informing them of the advantages offered them and advising them to banish any and all prejudices and false ideas they hold regarding this admirable recourse for the good of humanity. Since in the transportation and administration of the vaccine, some expense may be incurred, His

[28] Aleman to Governor of California, Mexico City, Aug. 27, 1823, Cal. Arch. St. Pap. Sacr., Vol. 16, p. 15.

> Highness has directed that the Provincial Deputation supply means not only to the large cities but also to the towns of their districts. In order to facilitate and inform regarding the method of administration they will resort to the distribution of circulars, as was done under the system of instruction devised in the time of the Viceroy Don Feliz Calleja."

The practical effect of this decree seems to have been negligible as far as California was concerned since there is no record that its provisions were ever carried out.

In the year 1828 the long regional immunity of California seems definitely to have come to an end for in this year began probably the first of a series of devastating epidemics. Not only are 1828 and 1829 noteworthy in connection with the first serious incursion of smallpox but also because this incursion coincided with the first major attempt at wholesale vaccination. This incident would probably have been lost to the memory of posterity, for the official records are remarkably silent upon the whole matter,[29] had it not been for the wide publicity given to an account published in 1831 by an American frontiersman and adventurer James O. Pattie.[30]

The whole Pattie narrative is one which has excited much comment and interest since the date of publication. Pattie's statements, particularly regarding the smallpox epidemic have been quoted and paraphrased many times and the Pattie vaccination legend is firmly embedded in the California literature. His statements have been accepted by all writers on California medicine as essentially correct,

[29] Bancroft (*History of California*, vol. 3, p. 169, footnote) says "strangely enough there is no record in the archives reporting the ravages of smallpox or Pattie's professional tour. . . ." I have been able to find only one document pertaining to the period, a letter from Echeandia to his presidial commanders on March 12, 1829 (Cal. Arch. Dep. Rec., Vol. 6, p. 191) in which he asks them "to take such measures as are possible to secure vaccine to preserve the inhabitants from the scourge of smallpox." One would suppose, in view of previous governmental interest in the problem, that much correspondence would have passed if in 1828-29 a serious outbreak of smallpox among the whites had occurred or had been anticipated.

[30] The material and quotations here presented from Pattie's account are from his *Personal Narrative*, 1824-1830, as published in Vol. 18 of the Thwaites series on Early Western Travels (1906). This is a reprint of the Timothy Flint edition of 1831.

and aside from some observations by Bancroft no attempt at critical analysis has been made.[21] For this reason and because of the fundamental importance of the narrative to the subject at hand it seems worth while to devote some attention to it.

Pattie in company with his father and several other pioneers arrived in San Diego on March 26, 1828, and was thrown in prison by Gov. Echeandia in accordance with contemporary Mexican policy. After remaining incarcerated until early the following year he was released upon condition that he travel through California and vaccinate all the inhabitants. This, according to his story, he proceeded to do. Finally he was released from all obligations and left the country in 1830.

The manner in which the smallpox contingency arose is thus described in his own words:[22]

> "At length (about Dec. 20, 1828) the smallpox began to rage on the upper part of the coast, carrying off the inhabitants by the hundreds. Letters from the distressed people were continually arriving, praying the general to devise some means to put a stop to the disease which seemed to threaten the country with destruction. The general was thus beset by petitions for several weeks before he could offer a shadow of relief for them. He was much alarmed, fearing that the disorder might extend its ravages to the part of the coast where he resided.
>
> "One day the soldiers through mere inquisitiveness asked the Dutchman if he knew any remedy for the complaint. He answered that he did but that he had none of the article that constituted the remedy. He added, however, that he thought my father had brought some of it with him, as he recollected his having vaccinated the people at the copper mines. This conversation was communicated to the general immediately, who sent a sergeant to me to inquire if I had any of the remedy spoken of by the Dutchman, as brought by my father? I

[21] Cf. Packard (Vol. 2, p. 914), Harris (pp. 62-63) and Lyman, G. D. (*The Scalpel Under Three Flags*, Cal. Hist. Soc. Quart., Vol. 4, pp. 142-206, 1925). All these authors not only accept Pattie's statements but are highly laudatory of his efforts, although Harris questions his total of 22,000 vaccinated.

[22] *Personal Narrative*, p. 264.

answered in the affirmative . . . upon his demand whether I knew the method of applying it, I again answered in the affirmative . . ."

There then ensued an acrimonious discussion, Pattie demanding his freedom in return for his services. During this interchange

> "In the course of the night (Dec. 22) he (the Governor) received a letter containing information of the death of one of his priests and that great numbers were ill of the smallpox."

Negotiations dragged on nearly a month until [83]

> "On the 18th of January, 1829, I began to vaccinate; and by the 16th of February had vaccinated all the people belonging to the fort, and the Indian inhabitants of the mission of San Diego . . . Having completed my vaccinations in this quarter, and procured a sufficient quantity of vaccine matter to answer my purpose, I declared myself in readiness to proceed further. I communicated the matter to one thousand Spaniards and Indians in San Diego."

The next several pages are devoted to an account of his journey together with general observations concerning the life and customs of the inhabitants. At each mission, pueblo and presidio he stopped to vaccinate. The numbers involved are mentioned and will be discussed subsequently. Finally he reached San Juan Bautista. He then goes on: [84]

> "I had now reached the region of smallpox, several cases of it having occurred in this mission. The ruling priest of this establishment informed me that he did not consider it either necessary or advisable for me to proceed farther for the purpose of inoculating the inhabitants of the country, as the smallpox had prevailed universally through its whole remaining extent. As I had heard while in San Diego, great numbers had been carried off by it. . . . He furnished me a horse and I set off for the port of San Francisco vaccinating those whom I found on the way who had not had the smallpox."

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[83] *Personal Narrative*, pp. 273-274. [84] *Personal Narrative*, p. 282.

He reached San Francisco June 20, 1829, at which time "I had inoculated in all twenty-two thousand persons." After remaining a short time he went on a visit to Fort Ross, the commandant of which post he had met in San Diego. The Russian Commander [85]

> "had suffered greatly from the fear that the smallpox would spread among his people, before he should be enabled to prevent danger from it, through the means of the kinepox."

He began that day to vaccinate,

> ". . . and continued to be constantly occupied for three days, vaccinating during this period fifteen hundred individuals. I reminded them all that they should return on the fourth day provided no signs of the complaint appeared, and that they were not to rub, or roughly touch the spot, should the vaccine matter have the proper effect."

He remained here a week and then returned to San Francisco, his official duties completed.[86]

In evaluating Pattie's claims certain specific problems arise. These may be considered seriatim.

1. *General reliability.* It might be supposed that such a circumstantial account as we have here by an eye witness and participant would show a relatively high level of accuracy. However, as is pointed out by Bancroft, the author suffered from an extreme emotional complex, hatred of Echeandia and the Californians generally, which gives color to all his statements. The only persons who received complimentary consideration are the brother and sister Pico and the Russian commander. Even with respect to the clergy Pattie's remarks are violently distorted and in many cases obviously false. Furthermore, the original account was edited and no one knows how much altered by the Rev. Timothy Flint whose primary aim was to emphasize the spectacular and to whom strict accuracy was secondary.

[85] *Personal Narrative*, p. 285.

[86] I have not quoted from Pattie's account any statements concerning his difficulties with Echeandia or his controversy over payment since these matters are not directly germane to the subject and may be easily found in the original document. A full discussion is also to be found in Bancroft.

For these reasons no statement can be accepted without qualification or confirmation.

2. *Extent of epidemic.* There can be little doubt that smallpox was present, that it was serious and that it threatened to be even worse than possibly it turned out to be. Pattie's vague expressions quoted above (such as mortality by "hundreds," threatening the country with "destruction") are subject to certain comment.

A. The absence of official records, pointed out above (see footnote 29) is very significant. It is inconceivable that a vast epidemic, destructive to whites, should have left no trace in the documents.

B. The extent of any epidemic, at the time and afterward, is always exaggerated. Hence if the statement is made that "hundreds" perish, it is pretty certain that the mortality can not be measured by more than a few hundred.

C. There is no record in the census figures or personal correspondence that a material number of white persons were affected. Pattie's claim that a priest died of smallpox is not supported by any other evidence.

D. The number of Indians involved can be obtained from the mission census records.[87] Pattie says he first encountered the disease at San Juan Bautista and that it had been prevalent to the northward. We should therefore be able to find traces of its effect in the mortality statistics from the missions above this point. The pertinent data are assembled in Table I. Here are shown the average number

TABLE I

POSSIBLE SMALLPOX MORTALITY IN 1828

	San Juan Bautista	Santa Cruz	Santa Clara	San Jose	San Francisco Asis	San Rafael	San Francisco Solano	Total
Average deaths 1823-27	94	41	118	190	17	56	50	566
Deaths 1828.....	226	62	189	254	20	61	88	900
Excess over average for 1828...	132	21	71	64	3	5	38	334

The total population of the above missions in 1828 was 6480.

[87] These data are taken from the compilation of Mission censuses to be found in the Bancroft Library, Berkeley.

of deaths for each mission during the preceding five years, the deaths in 1828, and the excess of the latter over the average. It will be seen that in 1828, in San Juan Bautista, Santa Cruz, Santa Clara and San Jose the mortality was definitely greater during 1828. In San Francisco Asis (Dolores) and San Rafael the increase was slight but without statistical significance. At San Francisco Solano the increase was material but is at least partially accounted for by the fact that many new neophytes were being brought into the mission at the time. However, we may use the total and say that a maximum of approximately 334 out of a population of 6480 for that year could have died of smallpox. Furthermore, some deduction must be allowed for the following reason. The missionaries occasionally made notations on the census returns stating the cause of unusual mortality. Thus for 1828 we find in San Juan Bautista the note "measles and catarrhal fevers," for Santa Clara "smallpox and measles" and San Jose "smallpox." We have here clear and indisputable evidence that smallpox was present but also evidence that other diseases as well were rampant. Hence the entire excess mortality can not be ascribed to smallpox. It would probably not be too liberal to allow for the other diseases about 75 deaths and to say that roughly 250 Indians died of smallpox in these missions. There was then a serious outbreak but not a holocaust such as is implied in Pattie's assertions.

3. *Numbers vaccinated.* The claim of Pattie to have vaccinated 22,000 individuals plus the 1500 at Fort Ross has never been taken at face value even by those who accept his account in other respects. It is, however, of interest to speculate concerning just how far his tendency toward exaggeration may have carried him.

In his narrative he states precisely how many he vaccinated at each point. Since we have the census figures for all these places we may make a direct comparison. This material is to be found in Table II. It will be observed that in every instance except San Diego, San Juan Capistrano and San Gabriel, Pattie stated he had vaccinated more persons than were in existence. His total of 22,000 much exceeds the actual number of 16,324. (The Fort Ross figure of 1500 is much too high for the total number of Russians and the domestic Indians at that point never exceeded a very few hundred.)

We must therefore reduce the total possible vaccinations to approximately 16,000.

The number must be further reduced by the number of white persons who were living on outlying ranches and could not be reached and the neophytes who lived away from the missions or were actually fugitives. The value of 14,000 would be a liberal estimate of the

TABLE II

NUMBERS CLAIMED TO HAVE BEEN VACCINATED BY PATTIE

Location	Population in 1829	Vaccinations claimed by Pattie
San Diego *	1,989	1,000
San Luis Rey	2,736	3,904
San Juan Capistrano	947	600
San Gabriel	1,386	960
Los Angeles	1,192	2,500
San Fernando	836	967
San Buenaventura	789	1,000
Santa Barbara *	1,375	2,600
Santa Ynez	451	900
La Purisima	445	650
San Luis Obispo	328	800
San Miguel	747	1,850
San Antonio	710	900
La Soledad	333	1,685
San Carlos	234	800
Monterey	1140	500
San Juan Bautista	986	1,000
Fort Ross **	...	1,500
Total except Fort Ross	16,324	

* Presidio and mission. ** Whites and domestic Indians.

whites and Indians from San Diego to San Juan Bautista who were available on short notice for vaccination.

Even using the latter value the time factor becomes important. Pattie states specifically that he vaccinated in San Diego from Jan. 18 to Feb. 16 during which time he treated 1000 persons, a figure within the bounds of possibility. Of the four weeks consumed we must deduct the Sundays. If, then, he worked steadily and his figure

1000 is accepted, he handled approximately 40 persons per day. Now if he left on his trip March 1 (as Bancroft surmises) and reached San Francisco June 20 the total time amounted to approximately 115 days. From this must be deducted Sundays or 16 days plus travel time which would occupy at least 15 days. The balance, 84 days, would represent his maximum working time. If he operated on all these days and proceeded at the same rate as at San Diego (40 per day), then his total would have been 3360.

We may also speculate concerning the question of how many patients any man could vaccinate during the time allowed and under the conditions obtaining in 1829. Under favorable circumstances a good modern clinician, working alone, should be able to perform at least 25 vaccinations per hour, or one in three minutes. If he then worked eight hours a day for 84 days he could do 200 per day, or 16,800 in all. But Pattie was no clinician; he was a rank novice. He had no facilities and no assistance save what the military authorities and the busy missionaries could give him. Although he makes no mention of the matter, he must have had to go to his people in many instances rather than have them come to him. He must have spent some time getting his material ready for work and caring for it afterward. If he did a job of any quality at all he must have given each individual at least a cursory examination prior to vaccinating. He must have had to conduct some sort of conversation with many of them. In fact, with respect to his work at Fort Ross, he states (see above) that he told "them all" to come back in four days. All these factors and many others which will occur to any practising physician would tend to slow him down. It is unlikely, therefore, that he could do more than perhaps ten or twelve vaccinations per hour. However, let us be liberal and say fifteen.

The above estimate implies that Pattie put in eight hours on every day except Sunday. This in itself is unlikely. The mission neophytes did not actually work much more than six hours per day, and in the easy-going atmosphere of the country long and continuous labor was nearly unknown. Furthermore, there were constant interruptions of the most various nature, such as holidays, visits, conferences with priests or soldiers, etc. It will not be too radical to conclude that Pattie may have vaccinated six hours on five days or thirty hours

per week. Using this time schedule and an effective rate of 15 treatments per hour, he would have vaccinated in all 7200 persons.

In addition to his time spent in giving the first treatment, Pattie evidently observed his patients at the end of a few (possibly four) days for the second time. Even assuming that relatively few, say one quarter of these persons returned, some time must have been employed in this manner, thereby reducing the probable total by, let us say, one thousand, to a net of 6200. Furthermore, it must be remembered that Pattie was working under compulsion, for the vaccination tour was the price of his freedom from prison. Under such circumstances it is to be doubted if he exerted himself any more than he was obliged to.

To summarize, we may estimate the total number of vaccinations at very much less than the figure claimed by Pattie, and although exactness is out of the question, we may hazard the opinion that the actual figure was no greater than 3000 to 6000.

4. *Source of vaccine.* This is a very puzzling question. First let it be mentioned again that all the information we have prior to 1828 indicates an almost complete dearth of vaccine in California. Hence there could not have been any considerable supply on hand.

Pattie says that he got his first supply from the effects of his father. This in itself is a remarkable statement. The party with which the Patties had travelled had spent two or three years crossing the wild southwest, meeting many hardships on the way. Assuming that the elder Pattie had started with a supply of lymph it must have been small in quantity and some had been used, if the story is correct, at the "copper mines" while en route. The party had been incarcerated at San Diego in March, 1828, and most of the personal property seized. Any considerable supply of vaccine would surely have been confiscated. The elder Pattie, separated entirely in prison from his son, died a few weeks after arrival. If so, what became of the vaccine from his death to December 1828? The story can not be categorically denied because of lack of evidence but nevertheless a great deal of credulity is required to accept it verbatim. However, regardless of the younger Pattie's veracity in the matter, if there was some vaccine it could hardly have failed to be very small in quantity and poor in quality. Certainly it would have been utterly inadequate

for the tremendous task of vaccinating 22,000, or even 5000 persons.[38]

The actual source of the vaccine, at least for the tour, is fairly apparent. In 1829 the Russians, who had periodically purveyed a supply for the Mexicans, brought another lot and left it at San Diego and Monterey.[39] This supposition is supported by one of Pattie's own sentences in which he says that after having completed his work in San Diego "and procured a sufficient quantity of the vaccine matter" to answer his purpose he embarked on his journey. The quantity involved is unknown but evidently was adequate.

5. *Ignorance of Californians.* In his earlier passages, quoted above, Pattie implies that the Californians and Echeandia in particular were completely ignorant of not only how to employ vaccination but also how to treat smallpox in general. This is obviously untrue and is refuted by the official documents cited previously in this paper and specifically by a letter of Echeandia in 1828. The governor wrote in March of that year to the Commanders of the Presidios "to take all possible measures to get vaccine to preserve the inhabitants from the plague of smallpox."[40] The whole matter is probably a reflection of Pattie's violent hatred of the governor and his people.

6. *Origin of the epidemic of 1828.* In this connection it is necessary to note only that it arose in the north and spread toward the south, and that it had not affected the Russians at Fort Ross. Since the missions with the highest mortality were Santa Clara and San Jose it is reasonable to assume that the disease entered at or near the port of San Francisco, very likely emanating from some ship which touched there.

7. *The prophylactic value of Pattie's tour.* This is a difficult point to assess, but it is obvious that if Pattie's claims were founded on fact the province should have been substantially immune to smallpox for years to come. But if, as has been suggested, the vaccina-

[38] This point is discussed by Bancroft (Hist. Cal., Vol. 3, p. 167, footnote) who says: "It is not certain, however, that they had any vaccine matter in their possession in 1828, nor is it evident that Pattie could have kept that which he had from being taken."

[39] Bancroft, *Pastoral*, p. 632.

[40] Echeandia. March 12, 1828. Cal. Arch. Dep. Rec., Vol. 6, p. 191.

tions were only moderate in number and possibly poor in quality, then subsequent epidemics might have been expected. This was indeed the case, for during the next two decades smallpox was a serious menace in California, particularly among the Indians. Nevertheless it is doubtless true that many of the whites owed their immunity to Pattie's ministrations. Furthermore, the fact that later epidemics were invariably most severe in the north might tend to indicate that the vaccinations Pattie performed in the south proved beneficial to a large segment of the population.

8. *Conclusions.* To summarize this critique of Pattie's much publicized tour of vaccination, it may be said that Pattie undoubtedly did vaccinate large numbers of persons, that the work was probably of some value, but that the original account is unreliable and highly exaggerated in detail. The extent and significance of the incident have been considerably overrated by modern writers. That it made very little impression upon Pattie's contemporaries is shown clearly in Gov. Victoria's report to the home government only two years later.[41] Victoria wrote under the heading of epidemics:

> " Smallpox is almost unknown, nevertheless vaccination has been indifferent. As I am informed it has been practised only during the last few years by amateurs for up to the present date there is no physician in the whole territory."

The next serious visitation from smallpox occurred in 1838-1839, the " Miramontes Epidemic," of which we possess several accounts. There is no good evidence that the disease appeared during the intervening nine years. Other diseases were of course rampant, particularly among the natives. In 1833 a very destructive epidemic swept over the San Joaquin valley. Twitchell in his discussion of the matter has considered the evidence from contemporary accounts carefully and concluded that whatever the cause, it was not smallpox and subsequent writers agree with him.[42] There is, to be sure, a statement by Coronel that " it is certain that in the year 1834 small-

[41] Victoria, Informe general sobre California, Cal Arch. Dep. Rec., Vol. 9, p. 132, June 7, 1831.

[42] Twitchell, E. P., *The California Pandemic of 1833,* California and Western Medicine, Vol. 23, 1925.

pox invaded the northern part of California, specially Sonoma"[43] but it is probable that he erred in his date and actually had in mind the outbreak of 1838. This epidemic is particularly instructive since we have detailed knowledge of its onset and effects.[44]

Late in 1837 General Mariano S. Vallejo sent to Fort Ross a corporal of cavalry named Ignacio Miramontes to bring back a cargo of cloth and leather goods for the troops stationed at Sonoma. When Miramontes and his men returned they also brought with them the smallpox. How the disease got to Fort Ross or how much damage it did there is entirely unknown. However, immediately upon its introduction into Sonoma it began to spread. Fernandez states that Miramontes returned already stricken with the disease and that the Indians who accompanied him were likewise infected. Miramontes, it appears, had been vaccinated "in his youth" and "recovered in two months." If this is true, the effect of the early vaccination had disappeared or the operation had never been a success.

From Miramontes and his Indians the disease extended itself with "incredible velocity" (Fernandez) first attacking the inhabitants of Sonoma. Among these were Gil Ibarra and Ignacio Palomares who were being held as political prisoners. The latter was lightly affected but the former barely escaped death. The Indians of course suffered worst. There was a large number of natives in Sonoma both in the mission and on Vallejo's ranch as laborers. Vallejo moved the mission population to a place a mile and a half distant where they "died daily like bugs" (Botello) but such measures were without avail. The disease moved out over a wide circle affecting the natives over most of north central California. Cerruti is most specific regarding its extent. He says it nearly

[43] Coronel, A. F., *Cosas de California* MS, 1877, p. 224.

[44] The primary sources of information on the 1838 epidemic are accounts by Salvador Vallejo, *Notas Historicas sobre California* MS, pp. 45-46, 1874; Mariano G. Vallejo, *Historia de California*, Vol. 3, p. 233, 1875; E. Cerruti, *Establecimientos Rusos en California* MS, p. 8, 1877; Mariano G. Vallejo, Cal. Arch. Dep. St. Pap., Vol. 4, p. 205, 1838; J. Carillo, *Statement*, in *Pioneer Sketches* MS., p. 3, 1875; J. Fernandez, *Cosas de California* MS, pp. 48-49, 1874; N. Botello, *Anales del Sur* MS, pp. 83, 87, 1878; J. Alvarado, *Historia de California* MS, Vol. 4, p. 164, 1875. Further references to contemporary correspondence are found in the text.

Because of extensive repetition in the above accounts they are not here reproduced verbatim.

exterminated the inhabitants in " the valleys of Sonoma, Petaluma, Santa Rosa, Russian River, Clear Lake, the Tulares (i. e., the Sacramento) and extended to the slopes of Mount Shasta." It also attacked the Indians in the northern missions. Like the previous epidemic (1828) it did not become a serious menace in the south, although fears were entertained that it would do so. Alvarado says certain Indians, despite all precautions, came to the south and some sickness was observed but there is no record of its mortality.

The duration of the epidemic was considerable. It started in late 1837, continued through 1838 and was still raging in 1839. The peak year, however, was 1838.

All writers concur in ascribing a tremendous mortality to the disease. The usual expressions that the smallpox annihilated whole populations mean very little. However, Cerruti claims it killed 200 whites, 3000 Mestizos and 100,000 wild Indians. Salvador Vallejo [45] says it killed " upwards of sixty thousand " Indians and it is the opinion of Alvarado that three-fifths of the Indian population perished. He places the actual number [46] at 200,000 to 300,000. Fernandez puts the number at approximately 100,000. Although these estimates are unquestionably too high, there can be no doubt that the mortality ran into the thousands.

The natural reaction of the Indians to the new and terrifying disease impressed all observers. They immediately sought their sweat houses or " temescales " where they exposed themselves to great heat and then plunged into cold water. Salvador Vallejo says that " the death of so large a number of Indians is to be attributed to the fact that no sooner did they feel the attack of the smallpox than they went to the riverside and took a bath. I would not advise this method of curing smallpox, for as soon as an Indian took a bath death supervened." Similarly Carrillo states that " . . . as they had recourse to sweating in their temescales, this mode of cure

[45] Vallejo mentions the case of his private company of Indian soldiers whose number was reduced during the epidemic from 44 to 22 (*Historia de California*, Vol. 3, p. 233).

[46] Alvarado's reaction to this devastation is of interest. He says (*Historia de California*, Vol. 4, p. 164): " . . . I must admit that Alta California did not lose much with the disappearance of two or three hundred thousand Indians, for of all created beings I do not remember having encountered any others more useless."

proved fatal to countless thousands whose bones, often left unburied, bleached the hills surrounding the valleys of Sonoma and Napa." Fernandez tells how Father Cuesta tried to dissuade the natives from this mode of treatment, but entirely without success. However, it is somewhat open to question whether the sweating treatment did more than aggravate the symptoms and whether the total mortality would not have been as great had the method never been employed.

Turning now to another aspect of the epidemic one may very pertinently inquire what steps were taken by the authorities to mitigate its effects. In view of the experience of Pattie ten years previously, it might be expected that wholesale vaccinations would have been performed or at least that some radical steps would have been taken. But apparently with the exception of one man, relative indifference seemed to be the attitude. This man was General Mariano G. Vallejo, who, in addition to being an enlightened and public spirited citizen, was located at the very focus and source of the epidemic, at Sonoma. After the epidemic had been progressing for some time Vallejo addressed letters to authorities, military, civil and religious, all over California advising and warning of the situation and its dangers. Thus he wrote to San Diego:[47]

> " The horrible epidemic of smallpox has invaded this frontier, causing very severe havoc . . . Vaccination and good diet are the only means of avoiding this widespread contagion which, in the last months has caused the death of hundreds of persons . . ."

He then went on to ask that all possible measures be taken to prevent the spread of the disease. He also wrote to the Ayuntamiento at Los Angeles, to the commander at Santa Barbara and to Alvarado.[48] His interest is attested by statements of Alvarado,[49] who, although a political enemy of Vallejo, pays him deep tribute in this connection. However, the official records give no indication that anything specific was actually done. Apparently, since the disease by some miracle

[47] Vallejo to Commander at San Diego, May 23, 1838, Cal. Arch. Dep. St. Pap., Vol. 4, p. 205.

[48] Vallejo to Ayunt. at L. A., May 23, 1838, Cal. Arch. Dep. St. Pap., L. A., Vol. II, p. 103; Vallejo to Alvarado, May 25, 1838, Val. Doc., Vol. 5, p. 89.

[49] *Historia,* Vol. 4, pp. 161 ff.

confined itself to the wild tribes of the north and the settlements around San Francisco Bay, the southern part of the province did not feel that the matter demanded urgent attention. Argüello [50] wrote back from San Juan Capistrano that he would take all possible measures. Carrillo replied from Santa Barbara simply that he had not been able to secure any vaccine for use on the Indians.[51] (This, by the way, is a remarkable admission if Pattie's story is to be taken literally.) For, if there was enough vaccine to handle 20,000, or even 5000 cases in 1828, why was there none at all available in 1838? In 1839 Father Tapia [52] wrote to the Ayuntamiento of Los Angeles that the epidemic might very well attack the south and the inhabitants should be vaccinated. (But did not Tapia know that they had all been vaccinated by Pattie?). The Ayuntamiento [53] replied that the matter had been placed in the hands of the "Police Commission" and there the matter rested. As far as I am aware, there is no record of any vaccinations whatever having been performed. The Indians died wholesale; the whites fortunately escaped with few exceptions, and as long as this situation persisted there was no occasion for extreme alarm.[54]

Five years passed until California witnessed the final great smallpox epidemic of pre-American days. This occurred in May, 1844, and centered in the Monterey region.[55] The source of the outbreak was the Kanaka crew of the ship *California* who brought the disease

[50] S. Argüello to Vallejo, June 25, 1838, Val. Doc., Vol. 5, p. 100.

[51] R. Carrillo to Vallejo, June 23, 1838, Cal. Arch. Dep. St. Pap., L. A., Vol. 5, p. 23.

[52] Tapia to Ayunt. of L. A., June 5, 1839, Cal. Arch. Dep. St. Pap., L. A., Vol. 5, p. 25.

[53] Ayunt. of L. A., to Tapia, June 13, 1839, Cal. Arch. Dep. St. Pap., L. A., Vol. 5, p. 25.

[54] An item of minor historical interest in connection with this epidemic was the death from smallpox at San Jose Mission of the famous Indian patriot, warrior and horse thief Estanislao. His efforts to withstand the Spanish expansion into the great valley had proved unavailing and he thus at last succumbed to the common scourge of his countrymen. (Cf. J. M. Amador, *Memorias Sobre la Historia de California* MS, 1877, p. 48.)

[55] This account is drawn mainly from the excellent descriptions by Bancroft (*California Pastoral*, pp. 631, 635), Harris (*California's Medical Story*, pp. 43-44), and E. de la Torre (*Reminiscencias* MS, 1877, pp. 110-113). Much of the material, therefore, is not new, but is presented for the sake of completeness.

from San Blas. Although the men had recovered the contagion was carried in laundry sent by Consul Thomas Larkin from the ship to the town of Monterey. The epidemic was immediately recognized as serious and strong measures taken. Torre says the disease was particularly virulent and that of those attacked most succumbed.[56] Most of the victims, although not all, were Indians. The previous epidemics had done much to secure the vaccination of the whites and apparently the Mexican population did not suffer extremely.[57]

Nevertheless more energetic steps were taken than had been the custom in previous epidemics. Most important of these was the establishment of a hospital. The ayuntamiento (town council) of Monterey met on May 28 and voted its establishment. At about the same time a board of health was set up. Bancroft says it consisted of the second alcalde Serrano, the Mexican Osio, the American consul Larkin, the Scotchman Spence, and the Englishman Watson. The Board drew up certain recommendations and presented them the next day at a general meeting. Presided over by Governor Micheltorena, it was attended by the members of the ayuntamiento, the officers of the garrison, and the heads of resident families. Torre also mentions as present "the parish priest Father Jose Maria del Refugio Suarez del Real and the foreigner James Stokes who acted at times as physician."

As a result of this gathering a house was rented for eight dollars. Two nurses were appointed and a corporal with four men designated as a burial squad. Since there was no physician in Monterey the direct administration was entrusted to a committee. This committee was to visit the hospital three times a day. The ayuntamiento agreed to furnish lighting, together with boards and hides for use as beds.

Considerable money was collected. Bancroft says the government agreed to give $125 per month, Micheltorena $25, the bishop $25, Larkin $5, and twenty-eight others from $1 to $5 each, for the duration of the epidemic. "The total monthly amount promised was $249." Micheltorena wrote [58] that he had arranged with Larkin to

[56] Bidwell, quoted by Harris, said that 80 persons died.

[57] Harris points out (p. 44) that numerous vaccinations had been completed by Streeter under the auspices of Larkin.

[58] Micheltorena, June 1, 1844, Cal. Arch. St. Pap., Vol. 12, p. 10.

furnish from government funds $143, not $125 as Bancroft states. Torre makes the assertion that the ayuntamiento appropriated a lump sum of $500, the two alcaldes each gave $50, and five other officials $25 each. This would amount to $750 wholly apart from government aid and other personal contributions. Torre may have been in error since he was writing from memory more than thirty years later, but the significant point is not the precise sum involved but the fact that the poverty-stricken little community was able to raise anything like such an amount. From the general tenor of the accounts, the inference is perhaps permissible that the guiding force was the energy and drive of the foreign element, including such men as Larkin and Spence. At all events the epidemic was kept within bounds and all danger seems to have been passed before the end of the year.

Simultaneously smallpox appeared in the south. It evidently made little headway because P. H. Reid was able to write [89] in May, 1844, that "the number of smallpox cases is three and I think the smallpox is of the type *variola vacinae* which is relatively milder and less contagious." Nevertheless the administration of Los Angeles took cognizance of the situation and promulgated a decree which read as follows: [90]

"1. Police watchmen shall see that the drinking water is clean.

2. The number of watchmen shall be increased if necessary.

3. They shall see that cattle slaughtered for food be healthy and that the offal be carried outside the city limits. They shall warn persons going out from the town to keep meat in well ventilated places.

4. Inn keepers shall not permit the gathering in their hostelries of drunkards or vagabonds under penalty for the first offence

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[89] P. H. Reid to Requena, San Gabriel, May 17, 1844, Cal. Arch. Dep. St. Pap., L. A., Vol. 8, p. 15. However, there is a letter from Fr. J. J. Jimeno to Fr. Duran, dated August 22, 1844, at Santa Ynez in which he states that the father at Purisma has died of smallpox, that very few Indians are left and that the disease is still raging there (de la Guerra Doc., Vol. 7, p. 17).

[90] M. Requena, Bando, Los Angeles, July 4, 1844, Cal. Arch. Dep. St. Pap., L. A., Vol. 8, p. 22. See also Bancroft's *Pastoral*, p. 631.

of $5, for the second of $10, and for the third of closure of the tavern.

5. Green fruit shall not be sold.

6. Every ship that arrives at San Pedro shall defer disembarkation of persons and baggage until visited by the Board of Health, and if it arrives infested it shall undergo quarantine.

7. The judges of the city shall not permit the entrance of any person, no matter what his class, if he is infected.

8. Those citizens who are in the enjoyment of health shall bathe and clean themselves frequently and shall keep their houses clean.

9. Chile shall not be eaten, nor stimulating condiments, and salt meat shall be washed before cooking.

10. Sulphur shall be burned as a fumigant daily on a hot plate and the houses shall be sprinkled with vinegar.

11. This decree shall be read by a town-crier in all houses for greater publicity."

Such was the situation when the Americans came: three epidemics in twenty years, the Indians decimated, the whites either vaccinated or endowed with natural immunity, the disease thoroughly established in all parts of the territory and waiting only for a new mass immigration to continue its deadly ravages.

In concluding this survey of the smallpox problem in early California, it may not be inappropriate to quote an eyewitness narrative of experiences in the 1844 epidemic, a narrative which, although short, gives a vivid picture of the suffering undergone by the ignorant and backward natives as a result of the white man's diseases.[61]

" Before the establishment of the hospital many of the Indian domestic servants had gone away by night into the fields where presumably they succumbed without anyone helping them. I saw this with my own eyes in the case of an Indian whom I met on the street one night while I was on patrol with eight of my neighbors (two of these still live in Monterey, their names

[61] E. de la Torre, *Reminiscencias* MS, 1877, pp. 112-113.

being Jose and Juan Madariaga). The Indian was in a ditch by a wall where he had been moved to get him out of the way. On hearing the groans I approached the place from which they proceeded. I asked him who was there. He replied that he was the cook of Mr. David Spence and was called Alejo. He said a cowboy had come from the ranch, taken him, and placed him in a cowhide, dragged him away, and thrown him in that ditch. After consulting with my companions, we wrapped him up in two of our blankets and had him brought to my own house, in which there was another Indian seriously stricken with smallpox. This was about midnight and the unlucky man died at four in the morning. I reported this to the Ayuntamiento, but since Mr. Spence and the other members were associates and friends, the affair had no serious consequences for him. As to the deceased, I had him taken to the cemetery and given burial. I made use of this occurrence to arouse sentiment in favor of doing something for these unfortunates and from this resulted the establishment of the hospital."

HISTORY OF AORTIC INSUFFICIENCY

NATHAN FLAXMAN, M. D.
Chicago
From the Department of Medicine, Loyola University Medical School

The tendency to class all cases of aortic insufficiency as syphilitic, unless shown to be of other etiology, has become common. The pendulum has swung completely to the other side in the analysis of lesions of the aortic valve. Apart from the development of our knowledge concerning the anatomy and physiology of the aortic valve and the common recognition of aortic insufficiency, the story of the complete change as regards the etiology of this valvular lesion is interesting. The earliest tendency was to attribute the lesion to strain on the heart or even direct trauma, the latter account being quite common. After the recognition and acceptance of the syphilitic etiology, a middle course was followed and trauma was neglected. Hirschfelder (1) stated that aortic insufficiency is of three types: inflammatory with vegetations, rupture (ulceration), and sclerotic swelling. In the past two decades lesions of the aortic valve have been classed mainly as syphilitic, occasionally as bacterial or rheumatic. Within the past few years trauma again has been considered in the etiology of aortic insufficiency, and very properly this time, but ere long the pendulum may again swing back to its original status. For these reasons any consideration of the history of aortic insufficiency seems to offer the clearest viewpoint on the important features of this valvular lesion of the heart.

In 1706 William Cowper described the first cases of aortic insufficiency. He practiced in London from 1691 to 1709, during which time he devoted most of his attention to the study of anatomy. Considerable controversy arose over one of his works. This tended to cast a skeptical view over all his writings, an attitude which, no doubt, was unfortunate. In 1694 Cowper published his account of the muscular system of the body, the " Myotomia Reformata." The controversy arose in 1698 when he published the " Anatomy of Humane Bodies." Bidloo, the great Dutch anatomist, called Cowper a " highwayman " and accused him of having plagarized the 1685

Bidloo's Anatomy. He scolded Cowper about this in 1700 in his "Gulielmus Cowper, criminis literatii citatus." Cowper retorted that the plates of Bidloo's Anatomy were originally drawn for Swammerdam and that he had as much right to them as Bidloo. Some 200 years later Dr. Hewitt of the Royal College of Surgeons discovered that on the frontispiece of Cowper's Anatomy a circle of thin paper bearing Cowper's name had been pasted over the name of Bidloo with the title of Bidloo's Anatomy in Dutch. Major (2) stated that apparently this discovery bears out Bidloo's contention that Cowper's anatomy was really a piece of scientific piracy. However, Garrison (3) stated that the 105 plates in Bidloo's Anatomy were actually plagiarized by Cowper whose "Anatomy of Humane Bodies" is original as to the text and nine perfunctary plates were supplied by Cowper himself.

No evidence can be found that the controversy affected his reputation and certainly had no effect on his later work, of which that on aortic insufficiency was an important contribution. In 1702 he described the urethral glands, since known by his name (4). Four years before his death at the age of 43 years, Cowper described "Ossifications or Petrifactions In The Coats of the Arteries, particularly in the valves of the Great Artery" in a paper contributed to the Philosophical Transactions of the Royal Society (5). He described three cases of aortic insufficiency, all autopsied, with plates of the heart and the open aorta showing the involved valves.

The first case was that of a 30 year old male with extensive tuberculosis of the knee-joint who had an unequal pulse (extrasystoles every sixth beat). This man died of pulmonary tuberculosis and an autopsy revealed that the three semilunar valves, which Cowper explained "hindered the blood from returning to the heart after it was expelled by its systole or contraction," were thicker, not so pliable as naturally, and did not adequately apply to each other. He explained also that this condition allowed the blood of the great artery to "recoil and interrupt the heart in its systole." This "stubbornness of the valve" was due to a "bony or stony body." The heart, especially the left ventricle, was a little dilated from its natural size, but not two or three times as big as was the left ventricle in the next case. In this second case Cowper reported:

" The symptoms, some years before the death of this person, who was about 40 years of age, were extraordinary shortness of breath, especially on any fatigue, with an intermission of one stroke in three of the pulse; his posture of sitting up was more eligible than any other, he complained of great faintness, and now and then of pain about the heart. The extreme parts were often cold, which towards his death increased more and more on him; his legs and arms became gangrenous some hours before (death).

" Upon opening the chest, the heart, particularly, the left ventricle, was found larger than that of an ordinary ox, and filled with coagulated blood. The valves of the great artery were petrified, insomuch that they could not approach each other. An orifice remained always open behind the petrifications, which had clogged the valves, and hindered their application to each other in a natural state."

Cowper evidently understood clearly the function of the aortic valve. He indicated that insufficient valves not only allowed the blood to regurgitate into the heart but balked the impulsive force of the left ventricle. He erred, however, in attributing muscular fibers to the aortic valve and felt that involvement of the cusps prevented the valves from contracting due to the fiber involvement. His last case was that of a 72 year old male who sometimes had intermissions of the pulse several years before his death, and in whom Cowper found various petrifications of the mitral and semilunar valves.

In 1715 the " Traité nouveau de la structure et des causes du movement naturel du coeur " of Raymond Vieussens (6, 7) appeared. In this book (8) Vieussens stated that he was aware of anatomists having found in animal and in man ossification of the aortic outlet, but that he had never read or heard that they recognized any alterations in the natural textures of the valves. He described the case of Jean Chifort, a 35 year old native of Mouguyo in Languedoc, Diocese of Montpellier, who had a severe attack of epilepsy and had been taken to the Hospital Saint Eloy of Montpellier when M. Verny relieved the attack. While on hospital rounds Vieussens examined the patient and after noting the pallor of his face, " examined his pulse, which appeared to be very full, very fast, very hard, unequal, and so strong that the artery of the first one

and then the other arm, struck the ends of my fingers just like a cord would have done which was very tightly drawn and violently shaken."

Vieussens believed that the patient suffered from a violent palpitation of the heart. When he questioned the patient on this fact he was informed that the assumption was correct. The diagnosis of a polyp in the right auricle of the heart was made with the reasons given for this. In addition, he stated at the bedside of the patient that there was something else extraordinary, which he did not understand, in some part of the heart and predicted that it would soon cause the death of the patient. The prognosis was correct, as the 35 year old patient died three days later. At autopsy a polyp was found in the right auricle. The left ventricle was very dilated. The walls of the trunk of the aorta appeared to be very thick, very hard, and like cartilage. The semilunar valves were markedly stretched and cut off at the tips which were osseous. Vieussens reported that he saw this man 20 years before the publication of the treatise, in 1695, and concluded:

" So that the great tension of these valves allowed the left ventricle to pass the blood which the right furnished it into the aorta only by their very violent contractions, and as they had been cut off the ends could never approach each other closely enough to prevent any opening between them; that is why whenever the aorta contracted, it sent back into the left ventricle a part of the blood, caused by the tension and the bony gashes of the sigmoid valves of the aorta, which caused the palpitation of the heart and the throbbing of this artery, which was produced by very strong beats."

The subject of polyps (9) was of great interest at that time. The significance accorded to the postmortem clots prevented recognition of the significance of vegetations on the valves.

In 1769 Morgagni (10) described another interesting observation of the cardiac lesion under discussion. It was the case of a woman (seen in 1731), who complained of palpitation and difficulty in breathing, of such a degree that very often she seemed to be just at the point of death. Clinically it was presumed that she had a dropsy of the pericardium. At autopsy Morgagni found fluid in the thorax and abdomen but none in the pericardium. The aortic

valves were indurated, and one of them was bony. For some unknown reason, possibly because the patient died at the time the genital parts of a woman were necessary to finish the public demonstrations of the year 1731, Morgagni was not as lucid on this case of involvement of the aortic valve as he was on many other subjects which he brilliantly illuminated. He mentioned the observations, however, of Verdriessus, Plancus, Graffus the younger, and the celebrated Cohausen, on similar but not identical cases.

In 1815 Joseph Hodgson (11) gave his classic description of "praeternatural dilatation" of the arch of the aorta (apart from aneurysm), in which he cited two typical examples with involvement of the sinuses of Valsalva and the aortic cusps. He added that aneurysm frequently exists at the same time. Scarpa (12) was credited as having recognized this same condition of dilatation of the ascending aorta and with having found it frequently in association with aneurysm. Hodgson wrote:

"The condition of the ascending aorta appears to be generally induced by a previous disease in the coats of the vessel, in consequence of which it loses its elasticity and does not again regain its natural dimension after the blood has passed through it."

Scarpa had remarked that syphilitic patients are very liable to steatomatous and ulcerative disease of the coats of the aorta, but both he and Hodgson had failed to note the relationship to syphilis.

The Hunterian Society of London was honored on Feb. 21, 1827 when Thomas Hodgkin (13) read his paper "On Retroversion of the Valves of the Aorta," in which he stated that this aortic valvular lesion was new to him. He claimed that Corvisart, Laennec, Bertin, Rostan, Bouillaud, and Andral had made no allusion to it. The morbid appearance of the diseased cusps which Hodgkin described differed completely from the previous descriptions. One may readily note this from the following words of Hodgkin's:

"In defect of a better name, I shall designate by the term retroversion of the valves that diseased state which allows of their dropping in towards the ventricle, instead of effectually closing the vessel against the reflux of the blood.

"The valves in which this derangement has taken place, have their loose edge considerably stretched and lengthened; hence, when

raised and applied to the side of the vessel, instead of forming a straight or rather concave line, they form a curved one, with its convexity upwards. In some instances there is a manifest laceration of the edge. The structure of the valves is more or less thickened, and the appearance of the corpora Arantii is nearly lost. The point where the lip of the valve is connected with the side of the vessel seems to be the principal site of mischief."

Hodgkin considered the derangement to be the result of a mechanical force such as violent straining, but felt that the previously diseased state of the artery predisposed. Specimen No. 1422, in the collection at Guy's Hospital was the first noted, but unfortunately all that was known of the subject from which the heart was removed was that the patient had an enlarged heart and anasarca. He described the case of a 30 year old stout, vigorous male seen in Guy's Hospital on March 29, 1826. The patient had a severe affection of the chest for some time, consisting mainly of palpitation and anxiety. Dr. J. H. Pickford examined the patient and recorded the findings about 1½ hours before death occurred. His findings suggest that the patient had bilateral pleural effusions, more marked on the left side. A diffuse cardiac impulse was noted, and the "cylinder" revealed a "purring, thrilling, or sawing kind of noise." Hodgkin had no opportunity to examine this patient with the stethoscope. At autopsy the aortic valves were found in the state which has been described in his own words. The heart itself was of large size, its cavities dilated. The pleural and peritoneal cavities contained clear, bright yellow serum. Hodgkin added that since this letter was written, he had noticed the following remark in Dr. Baillie's Morbid Anatomy:

"There is a preparation in Mr. Hunter's museum showing one of the semilunar valves thickened and ruptured to a considerable extent. It is very rare that such an occurrence happens, and in this instance the rupture was so large, that I conceived it must have proved almost immediately fatal."

Before taking up the next and probably the outstanding contribution on this valvular lesion, it is of unusual interest to read the writings of Gibson (14) on this. He stated that in consequence of Laennec's views on the second sound (of the heart), it was of

necessity an impossibility for him to arrive at any diagnosis of this disease. Gibson added that Hodgkin gave the first clinical description of the disease, but it escaped general notice until the publication of a note by Wilks on the history of valvular diseases. He stated:

"In his paper Hodgkin describes, amongst others, the case of a medical friend who suffered from very violent, although perfectly regular, arterial action, with a thrill in the arteries and great throbbing of the carotids. But he goes further than this, because he describes a murmur which, he says, 'presented this peculiarity, that it was double, attending the systole as well as the diastole.' These facts show that Hodgkin had fully grasped the most important clinical features of aortic incompetence."

James Hope, (15) in the first systemic treatise on the diseases of the heart, (16) commented both on the pulse and on the signs of disease of the aortic valve. He stated that it was a jerking pulse, a high degree of the pulse of unfilled arteries. This, he pointed to as the most remarkable, appreciable, and constant pulse produced by disease of the heart:

"I described this pulse (which had not previously been noticed by any writer on diseases of the heart) in several parts of the first edition of the present work in 1831; especially at p. 434; but having up to that time noticed it solely in cases of aortic regurgitation combined with inflammation of the heart or adhesion of the pericardium, I was in doubt as to its cause, and ascribed it more to the latter affections than to the regurgitations, propounding, however, the question in reference to the case of Copas, written in 1829, whether it was due to the regurgitation. This question I soon afterwards resolved in the affirmative by discovering the pulse in question in cases of aortic regurgitation alone. Dr. Corrigan, who wrote in 1832 or 1833 on permanent patency of the aortic valve as a supposed new disease, has so completely overlooked the pulse as even to state the reverse: 'It rises without any jerk under the finger.' (Dublin Jour. vol. X, p. 186)."

On the signs of disease of the aortic valve Hope gave the location where the murmur was heard best, where it was most intense, and its propagation. He stated that the murmur accompanied the second heart sound (diastolic) and was heard best above the aortic

valve and along the course of ascending aorta; that it was more audible than an aortic systolic murmur and sounded like whispering the word *Awe* during inspiration.

At the age of 30 Dominic John Corrigan (17, 18, 19) wrote a paper "On Permanent Patency of the Mouth of the Aorta, or Inadequacy of the Aortic Valves." (20) He stated that the general symptoms of the disease neither tell the seat nor the extent of the danger. The physical and stethoscopic signs, however, made up for the obscurity of the symptoms. His discussion of all the findings was complete, adequate, and lucid. He pointed to the three physical signs found in the disease, the visible pulsation of the arteries of the head and neck, the murmur, and the pulse.

It is true that the collapsing pulse had been noted by Cowper in 1705 and by Vieussens in 1715, but both men were simply describing what they felt and made no attempt to correlate it with the underlying pathology. Hodgkin, who got his idea from Mr. C. Aston Key, described this disease but his explanations of the clinical signs have been considered ambiguous. Corrigan was not aware of Hodgkin's paper, but, in a masterly manner, fully described the clinical findings and the underlying pathology, and advanced the correct explanation for the altered heart sounds. Excellent illustrations, showing several different pathologic processes in the aortic valves, accompanied the paper. He gave credit for the name of the condition to Dr. Elliotson, (21) whose term was preferable to the one he had originally intended. An unusual feature of this paper was the confession that certain beliefs in the paper of 1829 were erroneous. Corrigan stated:

"The morbid affections of the valves and aorta permitting this regurgitation are the following: 1st, the valves may be absorbed in patches, and thus become reticulated and present holes, through which the blood flows back into the ventricle; 2nd, one or more of the valves may be ruptured; the ruptured valves, when pressed, flapping back into the ventricle instead of catching and supporting the column of blood in the aorta, the blood then regurgitating through the space left by the broken valves; 3rd, the valves may be tightened or curled in against the sides of the aorta, so that they cannot spread across its mouth; and an opening is then left between the valves, in

the centre of the vessel, through which the blood flows freely back into the ventricle; 4th, the valves without any proper organic lesion may be rendered inadequate to their function by dilatation of the mouth of the aorta, which, affected by aneurysm, or dilated, as it frequently is in elderly persons, about its arch, will sometimes have the dilatation extending to the mouth of the vessel, and in such a case, the valves become inadequate to their function, not from any disease in themselves, but from the mouth of the aorta dilating to such a diameter, as to render the valves unable to meet its centre; the blood then, as in the other instances, regurgitates freely into the ventricle."

Corrigan reported only 11 cases (two females) with lesions due to various etiologies, and continued:

"The heart in all the cases that occurred was enormously enlarged, and its bulk arose from the state of the left ventricle, which in some cases was so much enlarged in activity and in thickness, as to make the organ resemble rather the heart of a bullock than that of a man. The other parts of the heart, although necessarily obliged to keep pace in some measure with this increased size did not at all partake equally in the enlarged bulk. The impulse of the heart was far less natural, even in cases where the hypertrophy of the left ventricle was greatest. In some of them no impulse could be felt; and in none did the impulse during life give at all a proportional measure of the excessive hypertrophy discovered after death."

He concluded his paper with the contention that the patient with aortic insufficiency, although the lesion is incurable, need not fear sudden death and should try to go about his business as though there was nothing wrong with the heart. This lesion became known as the "maladie de Corrigan," a name first used by the great French clinician, Armand Trousseau.

By the time Corrigan was 45 years old lesions of the aortic valve were generally recognized. Henderson (22) stated that in 1834, M. Guyot in Paris published a thesis containing an account of four cases of this disease which had been observed in the hospital practice of M. Rayer; in 1836, M. Charcealy described ten new cases, MacAdam of Dublin one case, and Watson of London two cases. Of the four cases Henderson himself described, only one was autopsied.

In 1844 Inman (23) reported the case, before the Liverpool Pathological Society, of a 32 year old seaman with symptoms of two years' duration but who had worked until six weeks before admission to the hospital. Generalized edema appeared and progressed rapidly. The patient expired one week later. At autopsy the aortic valves were contracted and somewhat corrugated, quite incapable of closing the orifice. One of them was cribiform, having a large hole in it, which would admit an ordinary sized quill. The aorta itself was rough with deposits of a consistency between cartilage and the tissue of an artery. The inner coat was entire, and of its usual colour. Inman commented on the long duration of the disease, and rapidity of the final and fatal symptoms, the accuracy with which the stethoscope affected a diagnosis, and finally the character of the pulse, and the remarkable throbbing of the larger arteries as being the ordinary concomitants and almost pathognomonic signs of regurgitation through the aortic valves.

Observation 5, of Andry, (24) entitled lesion of the aortic valves especially, with a cretaceous state of the aorta. The case was that of a 48 year old porter, a former cavalryman for eight years, with a history of having been kicked by a horse on the left lower costal margin 22 years before. Generalized edema had appeared two weeks before Andry saw this man. Professor Bouillaud noted a " vibratory tremor in the carotids and subclavian arteries." The findings were of aortic insufficiency. At postmortem examination 35 days later tne heart weight was 720 grams. Andry's description of the pathology of the aortic valve and the arch of the aorta would today be considered typical of syphilitic aortitis with aortic insufficiency. Other similar cases were described under titles such as " Observation 9, Coincidence of valvular lesions, and a cretaceous state of the aorta." Bouillaud saw all the cases quoted by Andry as he was in charge of the wards as Professor of Clinical Medicine, and Andry was in the wards either as a simple observer of this successful practitioner, or during his last two years as *chef de clinique*.

The introduction of the term " Double Intermittent Crural Souffle " as a sign of aortic insufficiency was made by Paul Duroziez (25) in 1861. He stated that this murmur had been noted by many authors on aortic insufficiency, but that it had never been given as a

constant sign of the lesion. Compression of the artery would produce it if it were not present; by pressing the artery about 2 cm. above the stethoscope produced the first sound, with the second sound produced by pressing the artery 2 cm. below the instrument. He differentiated the murmurs of aortic insufficiency from those produced by lesions of the pericardium, tricuspid stenosis and pulmonary insufficiency with this means as an aid. This double sound also appeared in certain aneurysms, as he had demonstrated at autopsy. It may also be present in such cases as typhoid fever, chlorosis, and lead intoxication, but it is transitory.

One year later Austin Flint's (26) article "On Cardiac Murmurs" appeared and started a controversy which is still unsettled. He considered the pathological import of the mitral direct murmur, and pointed out that it may be produced with the flowing of the current of blood over a roughened surface without contraction of the aperture. This, he added, is undoubtedly rare, but the murmur can be produced without any mitral lesions and described two such cases which he had observed. In one case no mitral lesion was found at death, and in the other case the lesion was insignificant.

The first case, a 56 year old male who had repeated attacks of palpitation, a sense of suffocation, expectoration of bloody mucus, and a feeling similar to angina pectoris without pain, Flint saw in May, 1860. The man had intervals free from such attacks. On examination the heart was enlarged, and a presystolic murmur was audible at the apex and an aortic regurgitant (diastolic) murmur at the base of the heart. The patient expired during an attack of palpitation, three days after Flint saw him. At autopsy the heart weighed 495 grams and the wall of the left ventricle was markedly thickened. The mitral valve presented nothing abnormal, but an aortic insufficiency was noted.

In the second case, that of a patient seen in February, 1861 in the Charity Hospital of New Orleans whom he was asked to examine to determine the type of murmur, Flint found a systolic-diastolic murmur at the aortic area and a distinct presystolic murmur at the apex. At autopsy the aorta was dilated, roughened, with atheroma and calcareous deposits. The aortic segments were contracted and evidently insufficient. The heart weighed 555 grams. The mitral

valve was evidently insufficient. Flint based his explanation of this phenomena on experimental work concerned with the physiological action of the auricular valves:

"In cases of considerable aortic insufficiency, the left ventricle is rapidly filled with blood flowing back from the aorta as well as from the auricle, before auricular contraction takes place. The distention of the ventricle is such that the mitral curtains are brought into coaptation, and when the auricular contraction takes place the mitral direct current passing between the curtains throws them into vibration and gives rise to the characteristic blubbering murmur. The physical condition is in effect analogous to contraction of the mitral orifice from an adhesion of the curtains at their sides, the latter condition as clinical observation abundantly proves, giving rise to a mitral direct murmur of a similar character."

The only practical conclusion that Flint felt could be drawn from the two cases was that a mitral direct murmur, in a case presenting aortic regurgitant murmur and cardiac enlargement, is not positive proof of the existence of mitral contraction or any mitral lesions.

In the same year Walshe (27) stated that valvular lesions as a group do not cause sudden death, but one such lesion has a strong tendency to kill instantaneously, a fact to be kept in mind in estimating its prognosis, and that one is aortic regurgitation. He saw his first case in 1852 and collected eight similar cases in the next ten years. The manner of death was clearly syncopal and occurred at any time. The more pure and uncomplicated the regurgitation, the more likely was the individual to be cut off without a moment's warning. The case of a 35 year old male who never had a symptom of disease was cited as an example. Walshe's stethoscope noted a diastolic murmur at the base of the heart; superficial pulses were markedly visible. Insurance was refused, for which Walshe was severely criticized. The man dropped dead on the street two weeks after the rejection.

The final important clinical observation relating to aortic insufficiency was made by Heinrich Quincke (28) in 1868. He based his deductions on the microscopic observations of the capillary stream in the mesentery of small animals. Lebert had observed and reported (Handbuch der praktischen Medicin, I, p. 725) a true capillary

pulse, systolic reddening and diastolic paling of the cheeks in a case of aortic insufficiency. Claude Bernard noticed a transmission of the pulse to the vessels of the submaxillary gland through the capillaries, clear into the draining veins when, after cutting the sympathetic, stimulation of the lingual branch produced dilatation of the arteries. Quincke suggested that in man there are certain abnormal conditions that show a transmission of the pulse clear out into the capillaries of the finger, the nails, the hand, the forearm, and the foot. Sometimes it is seen in normal persons but it is not as easily determined as in certain abnormal conditions. He stated that powerful and sudden heart contractions are favorable for observing the capillary pulse, while hypertension and tachycardia are unfavorable:

"A large and rapidly falling pulse is seen especially in aortic insufficiency, and for this reason the capillary pulse is especially clear in this condition. Even in a horizontal position of the hand we see a very clear and rapid appearance and disappearance of the margin between the red and white zone and also with a uniform coloration of the nail and lightning like and evanescent reddening, so that the manner of appearance and disappearance of the capillary pulse is, for the eye, a characteristic sign of active visibility of the capillary pulse in health, and in addition the transparency of the nails and the proper degree of elasticity of the arteries must be considered."

Quincke asserted observations of the capillary pulse in four cases of aortic insufficiency, besides other cases of non-cardiac conditions. None were supported by autopsy evidence.

The etiology of aortic insufficiency was essentially connected with effort as late as 1872. Fothergill (29) stated that in the iron districts of England this form of disease was unusually frequent, especially among "Hammer men" or "strikers," but it was also found among colliers. It had been observed to be associated with labor involving great use of the arms. He also brought out that the rapid and excessive distention of the arterial system could be felt in the anterior tibial, where the German clinicians always palpated for it. This arterial distention could be felt as a distinct jar over the whole body, he added. Sir Thomas Watson related a case of a man whose wife would no longer take his arm when out walking with him, in con-

sequence of the unpleasant blow-like sensation produced by the arterial pulsation.

Balfour (30) also was inclined toward the strain and traumatic etiology. The cases of this lesion listed in his book are mainly those of rheumatic heart disease with combined mitral and aortic involvement. An exception is Case IV (seen in March, 1874) on p. 64, a husky police officer, aged 39 years, who " seven years ago had sores on his penis, but they were not followed by any sore-throat or eruption, etc." The etiology was considered by Balfour to be traumatic because " seven years ago he received a severe blow on the chest from one of the shafts of a lorry while trying to stop a runaway horse."

In the same year that Balfour made the above report, the essential facts on the relation of syphilis to aortic disease were first presented by Welch. (31) As usual the importance of the contribution was entirely overlooked. It was not until further work by other pathologists from 1885 to 1903 that this important connection was accepted. (32) This etiology was first mentioned in a text-book on heart disease in 1897. Broadbent (33) emphasized mainly the endocarditis (rheumatic), but " when the valvular disease is established during or after middle life, such causes are syphilitic affection of the valves and the wall of the aorta, degenerative changes included under the general term of atheroma, and rupture of a cusp of the valve. Syphilis may be suspected as the cause of aortic incompetence, which comes on in early adult life or middle age, and is not traceable to rheumatic endocarditis or to gout or to high arterial tension."

Balfour (34) adhered to the traumatic etiology in his clinical lectures on diseases of the heart and aorta in 1898. A typical case described by him was that of a blacksmith, aged 54 years, seen in November, 1870, who had an aortic regurgitation and at autopsy the heart weighed 900 grams. However, he cleared up the question as to the use of digitalis in this condition. Corrigan had discountenanced the use of digitalis in aortic disease, and in this he had been followed by many writers, especially by Fothergill. Gibson, (14) a pupil of Balfour's, stated that the fears expressed as to the use of digitalis are based upon the supposed evil of prolonging the diastolic period, and so allowing the regurgitation to exert its baneful influence

during a greater length of time on the left ventricle. These ideas could scarcely be regarded as substantial, for everyday experience taught that Balfour was right in his contention that digitalis is imperatively demanded when cardiac failure makes its appearance in aortic incompetence. For Balfour had said time and time again that digitalis is a drug which may be given in moderate doses at any period of the disease, not only without harm, but with positive benefit; that it is a remedy not especially indicated so long as the affection is only revealed by signs alone and not by symptoms also.

Since 1900 the subject of aortic insufficiency has been approached from numerous angles and many minor observations have been added to the subject. The feature which attracts immediate attention is the intense and sudden visible pulsation in the arteries. This pulsation may be so great as to shake the entire head, even when the patient is asleep. (35) Occasionally there is a visible pulsation of the entire uvula. (36) Shaking of the head synchronous with the heart beat, known as the sign of De Musset (after the great poet), may be evident. (37) It is said that Oppolzer (1) won his professorship at Vienna by casually making a diagnosis of aortic insufficiency while walking down the wards of the hospital and merely resting his hand upon the dorsum of the patient's foot.

A major controversy relating to this valvular lesion continues today only over the Flint murmur. In his original paper Flint supposed that the murmur was due to the existence of a functional narrowing of the orifice between the mitral cusps, which as Baumgarten in 1843 and Hammernjk (1) had shown, was closed at the beginning of auricular systole. Guiteras and Thayer (38) stated that the murmur is due to the vibration of the anterior cusp of the mitral valve being set in motion by the regurgitant stream. Thayer, and also Gibson, denied the existence of such a functional stenosis. Hirschfelder, (1) however, has been able to show on the excised heart, by the method of Baumgarten and Gad, that although the mitral valve usually opens along its entire length, yet when the pressure within the ventricle is increased, the separation of the cusps occurs at only a small portion of the line of closure; an actual functional stenosis is, therefore, present exactly as assumed by Flint. This subject is far from settled, as indicated by the following remarks of Conner: (39)

"I had pursued the Flint murmur most assiduously for a great many years without ever having encountered what seemed to me a convincing example of the phenomenon when, one day seven or eight years ago, while making rounds in the New York Hospital, I came across a man of 43 who seemed to be exactly the person for whom I had so long waited and searched. He had frank aortic insufficiency and had never had rheumatic fever, but had been treated for syphilis and had a strongly positive Wasserman reaction. The characteristic aortic diastolic murmur was clearly audible from the base almost to the apex, and at the apex itself there could be heard a typical rumbling, crescendo murmur which ended in a loud, sharp sound.

"Here, then, was a typical example of syphilitic aortic insufficiency. The patient's age, his luetic history, the absence of any earlier rheumatic attacks and the very recent development of his heart symptoms, all seemed to establish the diagnosis beyond any question. And yet he presented the unmistakable auscultatory signs of mitral stenosis. It seemed as though all the most rigid conditions that any captious critic could demand had been fully met, and the patient with his Flint murmur was displayed with pride to all and sundry. Eventually the poor man died with congestive failure and the autopsy revealed no trace of syphilitic aortitis, but instead an old rheumatic aortic insufficiency and a fairly advanced grade of mitral stenosis."

Aortic insufficiency, born and bred in controversy like many another disease entity, evidently adheres to its lineage.

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A HOSPITAL INSPECTOR'S DIARY

Being an Account of the Journey of Tobias Watkins, Assistant Surgeon General, U. S. Army, in the Year 1818

COLONEL HAROLD WELLINGTON JONES, M. C., U. S. Army
The Librarian, Army Medical Library

The author of this narrative, Hospital Surgeon Tobias Watkins, was born in Maryland in 1781. His early education must have been excellent judging from some of his writings which are replete with classical allusions. Where he received his medical education the available records do not show, but in 1808 he was in Baltimore and he issued there in that year the Baltimore Medical and Physical Recorder. This is credited with being the first medical journal published in Maryland. We find in Volume I no fewer than 80 clinical and other articles upon almost every conceivable subject. Several of these dealt with smallpox and the then recently recognized treatment by vaccination.

Dr. Watkins appears to have practiced medicine in Washington after his retirement from the Army in 1821. He delivered the anniversary discourse before the Columbian Institute in 1826. Its title is not given but the text is, "Knowledge is power." Dr. Watkins predicted a great future for the Institute and there he did not err, for in due time it became a university and eventually was amalgamated with the now well-known George Washington University.

During the War of 1812 Dr. Watkins served as surgeon of the 38th Infantry in 1813, and as Hospital Surgeon the following year. On April 18, 1818, upon the reorganization of the Army after the second war with England, he was appointed with Joseph Lovell as Surgeon General, the senior of the two Assistant Surgeons General provided by the act of reorganization. Dr. Watkins' sphere lay in the northern division of the Army, as that of his confrere, Dr. Bronaugh, lay in the southern division. His career in the Army was

a short one, as in 1821 the Army was again reorganized and although Dr. Lovell was reappointed, Dr. Watkins was honorably discharged. He returned to civil life, dying November 4, 1855. The diary, which is in the form of a report to General Lovell, has long reposed, quite forgotten, in the Army Medical Library, and is a closely written document of some twenty pages. It covers the summer of 1818 and comes to an end October 28th of that year, and it gives us descriptions of the medical affairs of Army posts of that early period of our national life.

Before going on to the diary we should perhaps consider briefly the history of these times dating from the close of the Revolution to the year 1821. They ushered in a period which the people fondly believed to be the " era of good feeling " of the Monroe administration, an era signalized indeed by an act oft repeated and still destined for repetition perhaps—the reduction of the Army.

In 1784 legislation had been passed which practically abolished the United States Army. The country was thoroughly against the maintenance of a military force and the immense armies of Europe were regarded as a temptation to the abuse of power and as necessarily tyrannous in conception. The Canadian frontier was our only apparent danger, and the people believed that the states chiefly concerned, such as New York, the northern New England states, as well as New Jersey and Pennsylvania, should render the necessary assistance in raising troops for what was really their own local protection. The earlier acts providing for the employment of troops studiously avoid reference to the appointment of officers by the general Government.

In 1786 there were but 2040 officers and men in the Army. Two years later there were but 595. No medical department was even recognized, the states employing such doctors as were needed for their individual requirements. Due to Indian troubles it was necessary, in 1792, to reorganize and increase the tiny Army. A force known as a " Legion " was formed consisting of about 5000 men, divided into four " sub-legions " of 1200 each, and General Anthony Wayne was appointed to the command. In the year 1798 artillerists and engineers became a part of the Army, and since war was imminent with France, the President was authorized to raise a pro-

visional army of 10,000 men with the necessary staff. This was really the beginning of our modern army, as it is now constituted. Two years later when it became apparent there would be no war, Congress again very nearly abolished the army except for the General and a small staff and including four infantry regiments. All the medical officers but six surgeons and twelve mates were discharged. In 1801 there were but 13 of the 18 left through failure to fill vacancies.

In 1812 when war with England became imminent, the country was ill-prepared for the struggle. It had forgotten its war experiences, and its military leaders were for the most part dead or too old for service. Its staff work was non-existent, and the medical department consisted of a few individuals with no war training. To make matters worse the surgeons of the Revolution had left behind them practically no records of their experience, their management of hospitals and camps, their knowledge of practical hygiene and so on.

Following the short but disastrous War of 1812 the medical organization was generally inefficient, there was conflict of authority, and hospitals except tent hospitals were at first almost non-existent. The Army suffered terribly from dysentery due to bad hygienic conditions including bad cooking and intemperance. Later on general hospitals were established at Burlington, Vermont, and Plattsburg, New York, and other places such as Malone and Buffalo, New York. The point of assembly of the Northern Army was at Greenbush, N. Y., from which place troops were despatched to the frontier. At one time nearly one-third of the command was sick. It was found then as now that regiments whose discipline was poor, always suffered the most from disease.

The hospital at Burlington was in the charge of Joseph Lovell who was a few years later to become Surgeon General. In 1814 it had acquired the reputation of a model for the entire Army under the regime of Lovell and his eminent successors, Wheaton and Mann.

During the war came new legislation mostly of a fragmentary character, and the Army was again reorganized but not much was done for the medical department. In 1817 Doctor Lovell, at that time chief medical officer of the Northern Department, addressed to Major General Jacob Brown, the head of the Northern Army, an

able paper on the cause of disease in the Army with suggestions as to the responsibility of surgeons in disease prevention. This paper is a classic and it evidenced the professional knowledge and efficiency of Lovell so that his appointment in 1818 on the reorganization of the Medical Department was perhaps no great surprise.

Joseph Lovell was born in Boston December 22, 1788 of a family of patriots, influential and distinguished. He graduated from Harvard in 1807 and studied under Doctor Ingalls of Boston. He was by far the youngest surgeon general the Army ever had, being in his twenty-ninth year when appointed. He saw at once the necessity for a revision of the Medical Department regulations and realized that medical officers should adopt new conceptions of their duties and their responsibilities. Thoroughly familiar with the conditions surrounding the Northern Army he lost no time in ordering his medical inspector Doctor Watkins on his journey to the frontier.

At the time the diary was written, as has been mentioned, the United States was just emerging from its second struggle with England. James Monroe was President, railroads undreamed of, the west a wilderness. George Washington was dead less than 20 years. We can perhaps picture the Army posts of that day from the brief descriptions. Many of these posts no longer exist, but some still flourish. Dr. Watkins' journeys to Plattsburg by way of Lake Champlain in company with General Brown, and in the wilderness the Indian still made his home. Today we drive through the islands in Lake Champlain in motor cars, but the scenic beauties of the region are unchanged and our eyes see the land as Dr. Watkins saw it one hundred and twenty years ago.

It is surprising to discover the fact that almost every person mentioned in the account can be readily communicated with, so to speak, even after more than a century has elapsed. With one or two exceptions the careers of all of them are easily found and many were noted characters. The reader is conscious of a thrill of excitement on reading Dr. Watkins' description of Captain Bennett's death from gastric hemorrhage, and how one wishes the good doctor had pursued the post mortem a little further and had not ceased his efforts upon finding the stomach abnormal.

Certain portions of the account have been omitted as of no particu-

lar interest to the casual reader. The commentator presents the narrative otherwise unchanged in the hope that Dr. Watkins and his brother officers will live again in the reader's imagination after more than a century.

The Narrative

Baltimore, Oct. 28, 1818.

To Doctor Joseph Lovell,[1]
Surg. Gen.
Sir:

In obedience to the orders and instructions received from you in May last I have now the honor to report to you the result of my tour of inspection through the northern division of the U. S. as far as I have been able to accomplish it. In order to attend as a witness at a General Court Martial from which it was necessary for me to return to complete my arrangements for ultimately leaving home delayed the commencement of my tour to so late a period of the summer that it would have been impracticable to visit both the western and eastern extremities of the Division without extending the time of my absence beyond the period pointed out for making this report. I thought it best, therefore, to defer my visits to the posts of Detroit, Chicago, and Mackinaw until the next tour, and go no farther west than Niagara. By this means I was enabled to visit all the other posts in the Division, and to spend at each as much time as was necessary to give me an opportunity of forming some acquaintance with the character of our medical officers without which one object of my inspection would remain unaccomplished.

I found the post of Greenbush under the care of Dr. Shaw,[2] who must be too well known to you as well as to the War Department to make it necessary that I should say much of his character. There were no books of any sort at the post for my inspection, the rooms

[1] Joseph Lovell, Surgeon General. Was appointed April 18, 1818. Served as such eighteen years, dying in 1836 only a few months after he had established the Army Medical Library in Washington.

[2] Samuel Shaw. Hospital Surgeon in 1813; appointed Post Surgeon 18 April 1818; resigned 31 December 1818, apparently as the result of Dr. Watkins' report. He died in 1834.

prepared for the hospital were large, airy and well situated, but they did not exhibit the appearance of proper attention on the part of the surgeon. There were but two soldiers at the time in the hospital, and both were chronic cases. The situation of the cantonment indeed is so elevated, airy and salubrious that but few cases of disease ever occur which can be so accredited to the influence of local causes. Dr. Shaw had been doing duty here but a short time, but his long acquaintance with the place and its vicinity enabled him to state what the experience of the Commanding Officer, Major Worth,[8] confirmed, that the post was uncommonly healthy and not subject to anything like epidemics. A citizen surgeon was employed to attend the arsenal at Gibbonsville, which, from its low situation and immediate vicinity to the borders of the river, is more subject to diseases than Greenbush, and the number of men employed here by the Ordnance Department seems to suggest the propriety of placing it under the care of a regular Post Surgeon. Dr. Shaw seemed to consider it as perfectly within his power to attend both to Greenbush and this place, and indeed solicited orders to that effect, but I am afraid the Doctor overrates his activity as well as his ability in seeking this additional duty. He is in my opinion utterly incompetent to the duties of either post, and so little confidence has either of the commanding officers in his professional skill that they both assured me that they could not suffer him to practice in any important case. Never having seen Dr. Shaw until the present visit, I feel it a part of my duty to seek every opportunity of conversing with him with a view to obtaining a knowledge of his qualifications, and am compelled to say, that I have seldom met with a more ignorant, illiterate practitioner. He appears moreover to be destitute of that humanity and tenderness of attention to the sick which might in some measure compensate for his want of talents and which are certainly essential attributes in the character of every professional man. I had a melancholy proof of this in the conduct of Dr. Shaw toward the unfortu-

[8] William Jenkins Worth. A well-known and gallant officer of Mexican War fame. At the time of this report Major Worth was an officer of the 2d Infantry; had been made a brevet Major in 1814 for his gallant conduct at the Battle of Niagara. He died a Major General in 1849. Fort Worth, Texas, was named in his honor.

nate Major Birdsall,[4] whose assassination took place while I was at Albany. It was an event which had drawn together most of the physicians of Albany before Dr. Shaw made his appearance in the encampment, all of whom were agreed to offer their services to an officer so universally esteemed, and some of them had already examined the wound in consultation and given their advice to the Major's friends. The conduct of the Post Surgeon in this occasion can scarcely be characterized by the epithet of *rude*; it was something still more reprehensible and was well calculated to excite the observation and mortify the feelings of his professional brethren. His deportment, after the Major had been conveyed to his house and when his afflicted wife and family were weeping around him, was so unfeeling and indelicate that I hazard little in saying that it excited the disgust of all who witnessed it.

From Albany I traveled through Utica and Brownsville to Sackett's Harbour. At this post also the troops, composed of the 2d Infantry, enjoyed good health. The apartments which had been appropriated for the use of the sick in the new and commodious and elegant barracks lately erected here, were not intirely completed in all their arrangements at the period of my visit, so that I had not an opportunity of enjoying the gratification which I am sure I should have experienced on a minute inspection of Dr. Wheaton's hospital organization. The formation of Dr. Wheaton's [5] acquaintance, with whom it had never been my fortune to meet before, added much to the pleasure which my visit to this place afforded me. He seems to be a gentleman of considerable scholastic attainments, of polite and agreeable deportment, and well read in his profession. He is ably

[4] Benjamin Birdsall of New York. Captain in the 4th Rifles and brevet Major in 1814 for distinguished service in the defense of Fort Erie during the second war with England. He was assassinated by a soldier of his command in July, 1818.

[5] Dr. M. V. Wheaton. Surgeon, 2d Infantry, in charge of General Hospital Burlington. Surgeon Wheaton was a noted officer of the Medical Corps who rendered valuable service in the War of 1812, and who lived nearly to the outbreak of the Civil War. Surgeon General Lawton's eulogium on this officer in 1860 was as follows: "Surgeon Wheaton's military life extended over a period of 47 years and was alike honorable to himself, to the Army, and to his country. I cannot in justice to my own feelings announce the death of this veteran officer, an old companion in arms during the War of 1813, without paying a passing tribute to his gallantry and efficiency as an officer and to his many qualities as a man."

assisted by Dr. Littlejohn,[6] the only mate then at Sackett's Harbour, who is a young gentleman of sterling merit whose value in our service cannot be too highly appreciated. Both gentlemen seemed to possess the confidence and esteem of all the officers of their regiment—a fact which speaks more in their favor than anything which I could add. The number of acres of ground which the United States owned at this place, has enabled Colonel Brady [7] to place under the direction of his medical staff a large lot as a hospital garden, from which the sick receive an abundant supply of wholesome vegetables. I had the pleasure of being present at an inspection of the barracks, messes, bedding, etc., and of observing the strict attention paid by all the principal officers to the cleanliness, health, and comfort of the soldiers. When this is the case in a climate naturally salubrious, it may naturally be expected that disease can make but little progress. A few catarrhal, pulmonick and inflammatory diseases form the chief portion of the catalogue of complaints which come under the notice of the surgeon, and they seldom give him much trouble. I found the garrison at Niagara so healthy that it was scarcely considered necessary to make any particular appropriation for the sick. A small room had been set apart for that purpose, but too inconvenient and too badly supplied to deserve the name of hospital. Dr. Everett,[8] a mate of the 2d Infantry, who had been stationed here for about 18 months, informed me that during that time no sickness had prevailed which could be called pulmonick. All he had to con-

[6] Samuel H. Littlejohn of Virginia. Entered the service in 1813 and was discharged in 1815, but was reinstated shortly afterward. He died in 1824.

[7] Colonel Hugh Brady. Entered the Army in 1792; Colonel 2d Infantry 1815; Brigadier General 1822; Major General 1848. Died 1851. He founded Fort Brady, Michigan, in 1820.

[8] Dr. Josiah Everett. 2d Infantry. A few weeks after Dr. Watkins' visit he was promoted to Post Surgeon from Surgeon's Mate. He died in 1832 of cholera. Surgeon Everett was Medical Director under General Winfield Scott's force in the Black Hawk War, which has often been designated as the "Cholera campaign" by the Army. The force was concentrated around Fort Dearborn, now Chicago, and in July of 1832 the disease made its appearance for the first time in the United States. General Scott ordered the command, which was en route by water, to disembark on an island near Mackinac. Other troops were landed and encamped near Ft. Gratiot. Up to the 8th of July there had been 25 cases, and Dr. Everett, who was the Medical Director of the Command, fell a victim. The actual mortality has never been determined because many dead lined the roads in the vicinity and were never identified. Others deserted in terror.

tend against was a few cases of pneumonick affections and diarrhoeas which yielded to the simplest remedies. It gives me great pleasure to mention to you the name of Dr. Everett—he is a young gentleman of polished education and accomplished manner, and appears to have acquired an extensive knowledge of his profession. His brother officers speak of him in terms of high esteem, and I cannot forebear expressing a hope that you will bear him in remembrance when an opportunity for promotion should occur. Neither at Sackett's Harbour nor at this place had the books and forms of accounts prescribed by the new regulations been received.

The month of July being nearly expired and my arrival at Niagara and the passage up Lake Erie being somewhat precarious on account of the interruption to the steam boat, I deemed it advisable, as I have said to postpone my visit to the western posts under the hope that the lateness of the season and my peculiar circumstances would be regarded by you as sufficient excuse for the present neglect of this portion of my study. I returned therefore from Niagara down Lake Ontario to Sackett's Harbour where I had the pleasure to join General Brown [9] and his family with whom I proceeded by way of the St. Lawrence to Plattsburg on Lake Champlain. It is impossible to convey to you in terms too exaggerated the high gratification which my inspection of the cantonment at this place afforded me. The Commanding Officer of the 5th Infantry, Colonel Atkinson,[10] whose reputation could secure no addition from the feeble testimony which it would be in my power to offer to the excellence of his character, seems to have placed his delight in perfecting a system of organization for his regiment superior in all its arrangements to anything which I ever before witnessed. So far as these regard the medical detachment, he has had an able and worthy coadjutor in the Surgeon Dr. Mower.[11] The hospital establishment was under the

[9] Major General Jacob Brown. He was the Commander in Chief of the Army from 1815 to 1828 and had received the thanks of Congress for his gallantry at the battles of Chippewa, Niagara and Erie. He died February 24, 1828.

[10] Henry Atkinson. Then Colonel 6th Infantry. Two years later he was made a Brig. General. On the reorganization in 1821 he was offered the post of Adjutant General which he declined, preferring to remain as Colonel of Infantry with his brevet rank of Brigadier General. He died in 1842.

[11] Thomas G. Mower. A distinguished officer of the Medical Corps and then Surgeon of the 6th Infantry. He died in 1853. One of the finest portraits in the

most admirable regulations; the sick wards, bedding, furniture &c displayed a neatness, and attention to the comforts of the sick, deserving the highest commendation. Here, as at Sackett's Harbour, the United States possess a large body of land the greater part in an excellent state of cultivation, and so divided into little farms or gardens, as to give a full portion to the use of the hospital. The cantonment is situated on a dry, sandy soil, open to the Lake in front and watered in the rear by the Saranac:—the atmosphere is pure and salubrious and the regiment accustomed to a strict and well regulated police, has generally enjoyed good health. The new forms of books and accounts had just been received, but not yet opened: those which Dr. Mower had been in the habit of using, his diary and register of practice, exhibited abundant evidence of his industry and ability with which his duties have been performed. Dr. Nicoll,[12] the only mate present, seems to be a young gentleman of great promise, and is highly spoken of by the Surgeon and Commanding Officer.

From Plattsburgh I crossed over the Lake to Burlington and then took the stage to Boston. Dr. Mann,[13] who superintends the recruiting rendezvous at this place and of whose zealous and active services the government have had so many proofs, has sometimes more than his share of duty to perform from the negligence of Dr. Waterhouse [14] who resides at Cambridge, and from all I could learn literally does nothing in the discharge of his publick duties. Dr. Mann is therefore compelled to attend as occasion requires at the arsenal at

Army Medical Library shows Dr. Mower (cf. A Portrait Gallery of Physicians.—Annals of Medical History, V. 9, No. 6, Nov., 1937, by Harold W. Jones).

[12] William H. Nicoll of New York. Surgeon's Mate, 6th Infantry. He became a Major Surgeon in 1830 and died the following year.

[13] James Mann, of Massachusetts. He served with great distinction as Hospital Surgeon in the War of 1812 and was Post Surgeon in 1818, dying in 1832.

[14] Benjamin Waterhouse of Rhode Island and Massachusetts. He was a Post Surgeon in 1818 and was honorably discharged on the reorganization of the Army in 1821. He died in 1846 at the age of 92. Dr. Waterhouse was 64 years of age at the time Dr. Watkins' report was made, and had been appointed by President Madison as Medical Superintendent of all military posts in New England. He was already famous for his work on vaccination and had been a professor at the Harvard Medical School, resigning in 1812 as a result of his malicious libels upon other professors due to his quarrelsome nature. Undoubtedly he was not a success as a military medical officer, great as were his talents.

Charlestown; but as this is about to be removed to the new building lately erected near Cambridge (now Watertown, Mass.), it is probable Dr. Waterhouse may find it sufficiently *convenient* to lend his assistance. The light artillery stationed on the island in the harbour of Boston, like all the troops I had seen, seemed to enjoy the most perfect health. The hospital department under Dr. Dunham [15] gives me the most entire satisfaction as far as the arrangements depended on the Surgeon; but the rooms appropriated for that purpose are small, inconvenient and wholly inadequate to the number of troops, for though the Island is not often visited by any advancing epidemick, yet in a common sickly season it generally happens that the Surgeon's Sick Report contains double or treble the number of patients that can be accomodated in the Hospital—the surplus must necessarily be confined to their common quarters and subject to all the inconveniences of indiscriminate commerce with the well. Nor are these inconveniences felt by the patient alone: you must be sensible how much the labor of the surgeon is increased by having a number of separate and distinct quarters to visit two or three times a day instead of one general department for the sick, and how inconvenient and almost impracticable it must necessarily be to watch the progress of his prescriptions or provide against numberless impositions. You will no doubt agree with me from these considerations that the government would consult their own interest while they promoted the good of the Service by consenting to the erection of a proper hospital for the garrison of Fort Independence. Dr. Dunham has not received the new books or regulations but had been in the habit of keeping such accounts of his practice, issues of hospital stores &c as his own judgment dictated which were in every respect full and satisfactory. He seems to be a gentleman eminently qualified for the station which he holds, and is spoken of by his brother officers in terms of exalted respect. I was also much pleased with his assistant, Dr. Livingston,[16] who is a young gentleman of the first respectability, by birth and education and whose professional acquirements merit your earliest notice.

[15] Lewis Dunham of New Jersey. He resigned the following year.

[16] Walter Henry Livingston of New York. He was promoted Post Surgeon the following year, was retained as Assistant Surgeon in the reorganization of 1821, and died less than a year later.

A detachment of the light artillery under Lt. Col. Harris [17] is stationed at Marblehead (Mass.) a little fortress at which is the most perfect example of military neatness I ever saw. The garrison is under the medical direction of Dr. Sergeant,[18] but the barracks are too contracted to admit of room for a hospital, and the post is generally so healthy as scarcely to make one necessary. The want of room makes it necessary for the doctor to live out of garrison but his dwelling is contiguous and his strict attention to his duties prevents any inconvenience from this circumstance. Consumption is the only disease which seems to belong to the situation and climate of Marblehead nor has the garrison suffered much even from this, not more than one or two colds having occurred in a year.

At Portsmouth, New Hampshire I found the hospital more crowded than at any other post, a bilious fever being at that moment prevalent: but this Dr. Goodhue [19] informed me was an unusual circumstance, the garrison generally enjoying good health. The United States here possesses two fortresses, the principal one of which, Fort Constitution, is situated on an Island two or three miles from the city at the point upon which the light house stands. It is open to the sea in front from which it is distant only about half a mile. The island is almost an entire bed of rock, the strata of which run in every angle of inclination between horizontal and perpendicular. The rock is chiefly granite intermixed with hornblende, quartz, &c of various thicknesses, and in one instance near the Light House—

Opposite to Fort Constitution, on the main, stands Fort McCleary, a small independent post, garrisoned with one company of Colonel Walbach's [20] battalion. The site on which it stands is elevated about

[17] Lt. Colonel Samuel D. Harris of Massachusetts. He had been brevetted for bravery in the battles of Chippewa and Niagara. He resigned in 1919, became a paymaster in 1821 and resigned from the Army less than a month later.

[18] James Hovey Sargent of Massachusetts, Post Surgeon. He became an Assistant Surgeon in 1821 and after forty years service without promotion, he resigned in 1846.

[19] Joseph Goodhue of Vermont. He became an Assistant surgeon in 1821 and resigned to enter practice three years later. On account of his large family Dr. Watkins requested permission of the Surgeon General for Dr. Goodhue to be allowed to practice privately in a nearby village. *See note 23.*

[20] John De Barth Walbach. He was born in Germany and entered the Army in

one hundred feet from the water, and the surrounding country is high and rocky composed chiefly of granite and limestone. This post is also under the care of Dr. Goodhue, who is a gentleman somewhat above the middle age but in active and vigorous health, and in ordinary times competent to the task of attending both posts. Both garrisons, as I have said, generally enjoy good health, but it sometimes occurs as on my visit that much inconvenience is experienced from the necessity of depending upon the attentions of one surgeon to two posts, separated from each other by a wide and sometimes dangerous river. This necessity is now particularly hard upon Dr. Goodhue who from infirmities, natural perhaps to his time of life, suffers a most painful dread of the water, even when there appears to be no danger in the eyes of others. He has never, however, on that account, intermitted his duties, but I think it due to the age and service of Dr. Goodhue to state the fact, and to suggest for your consideration the propriety of stationing a surgeon at Fort McCleary if it should be continued as an independent post. The death of Captain Bennett [21] having occurred during my stay at the Fort under circumstances of some peculiarity, I have thought it would not be uninteresting to give you a history of his case, as far as it came under my notice.—He had been seized two days before I saw him with a vomiting of blood; it came on without any premonition, and it was supposed that more than a gallon (sic) was discharged in the course of the day—he complained of no pain or oppression and appeared previously to have been in perfect health. Dr. G. who supposed the bleeding to proceed from some vessel ruptured by exertion, applied the usual styptick remedies, and on the following morning administered calomel combined with some saline preparations. The vomiting continued but with less copious discharges, and at longer intervals during the second day. On the third morning the matter

1799. Served in the dragoons, engineers, artillery, quartermaster's department as assistant adjutant general, and finally wound up as Colonel of the 4th Artillery in 1842, having been brevetted many times for gallantry in action. He died a brevet brigadier-general in 1857 *after 58 years service* in the Army, the last fifteen in command of his regiment.

[21] Thomas Bennett of New Jersey. He graduated from the Military Academy in 1806 and became Captain, Corps of Artillery, in 1813 when he was less than thirty years of age. His death occurred from gastric hemorrhage (possibly ulcer) Sept. 26, 1818.

discharged from the stomach and intestines resembled that discharged in the last stages of malignant yellow fever; the bleeding ceased and a delirium soon after supervened, in which I saw him in the afternoon. His pulse was rapid and apparently oppressed; it soon changed however to one more soft, full, and slow—his tongue was free from any indication of disease, nor did his eyes or countenance exhibit marks of approaching dissolution. The only unfavourable symptoms which I could discover, were a slight sub-sternal tenderness and a nervous picking of the bedclothes. These symptoms, however, subsided after a little time, and at sunset I left him apparently better, and returned to Fort Constitution. Dr. Goodhue and Doctor Thruston [22] (a gentleman of Portsmouth) remained with him until nine o'clock, when he appeared to be so much better, that Dr. G. also left him and crossed the river.

He slept quietly until one o'clock, awaked with aggravated symptoms of delirium, nervous twitching &c. which continued until six o'clock, when he died. The rapid course of his disease and its peculiar symptoms excited considerable alarm, and at the request of Colonel Walbach we made a partial examination of the body. There was a complete engorgement of the Liver, the whole mass of which was diseased: the intestines and all the other viscera of the abdomen were in a sound state, except the stomach—which we were unable to examine without occupying too much time, and disfiguring the subject more than we felt authorized to do from the uncommon obesity and distention of the cellular membrane.

The other cases of fever which I saw seemed to have nothing unusual in their appearance, to one accustomed as I had been to the Bilious fevers of our southern climate; but they occasioned some alarm here, which was not a little increased by the effect of Captain Bennett's sudden death upon the minds of the patients.—Dr. Goodhue had not received the new books and forms, nor had he received any supplies of medicines and stores for more than eighteen months. He complains very much of the irregularity with which his requisitions are supplied. The hospital is in tolerable good order and the patients seem to be treated with due attention. As Dr. Goodhue has a large family, chiefly dependent on his salary for support, per-

[22] No reference to Dr. Thruston can be found in any available biographical works.

mit me to solicit in his behalf that he may be permitted to enter into private practice. The small village of New Castle adjoins the publick ground on the island, and his practising would not at all interfere with the regular discharge of his publick duties and might make a convenient addition to his small income.[23] Col. Walbach speaks of Dr. G. in high terms, and from my own observations, I think I may venture to add, that he deserves your attention.

From Portsmouth I continued my journey to Portland in the district of Maine. Fort Preble is situated about a mile from the town, on a head land in Casco Bay. The shores of this, as well as of the numerous small islands which front it, are literally *iron bound*, the broken surfaces of the rock exhibiting that mineral in almost all its combinations, particularly the sulphuret of iron. Where the banks are not abrupt, the rocks are chiefly hornblends, talc, and pyrites. On one of the islands (Hog island) we found a stone fence, composed of Quartz, in every state of the most beautiful crystallization; at a little distance from which, on the west end of the island a bog ore is found in considerable quantities, intermixed with crystallized quartz, trap &c. Dr. Eaton [24] seems to have paid considerable attention to mineralogy and botany and had collected some valuable specimens in both those sciences. His hospital is in excellent order, and his arrangements display a taste and judgment highly honourable to him. The garrison is small, and the police of Major Crane [25] the commander, so well organized, that even in a less healthy climate, it would be wonderful if disease made much ravage among the troops. The truth is that nine-tenths of the cases that come under the notice of the Surgeon are mere casualties.—It gives me great pleasure to speak of Doctor Eaton—I have seldom met with a gentleman of more general and extensive reading,—which has been improved by a close and attentive observation of nature. Such men would do

[23] Medical officers of that day were not allowed private pactice except by permission of the Surgeon General. Dr. Goodhue was at this time a post surgeon receiving $30 per month plus $10.00 forage allowance and three rations at $9.00, a total compensation of $67.00.

[24] Joseph Eaton of Massachusetts. Surgeon's mate, 3d Art. 1812, resigned Dec. 1813. Regular service 1814, died 1860 after a service of 47 years.

[25] Ichabod Bennet Crane of New Jersey. Was transferred from the Marine Corps in 1809 and became captain in the Artillery at the outbreak of the War of 1812. He was brevetted Major in 1813 for meritorious service in the war.

honour to any service, and particularly deserve to be cherished by our government, when salaries offer such little inducement to men of talents.

Castine, to which place I next turned my steps, is situated on a peninsula, formed by the Penobscot and Castine rivers, which here empty into the bay of Penobscot. It was completely insulated while in the possession of the enemy, by a broad ditch between these two rivers, over which was a drawbridge. The works erected here are very inconsiderable, and the fort at present occupied by the troops of the United States, it seems, is private property. It is in a miserable state of decay and ruin, and is situated, I think, on the least eligible spot, for defence, on the whole peninsula. Nature has undoubtedly made Castine to be the key to the commerce of the East—it possesses a fine harbour for ships of the largest burden, and has full command of the most considerable river in the District of Maine.—Our company of Light Artillery under Captain Leonard [26] is stationed here, with Doct. Ballard,[27] a post surgeon of long service. There is nothing like a hospital at this place, and the doctor is compelled to keep his dispensary in a small dank garret, where no *order* has been attempted, and where perhaps all *attempts* at it would fail. The doctor is very attentive to his duties, but his professional knowledge seems to be very circumscribed. Of this he seems to be fully conscious, as he seldom trusts to his own practice in any important case, there being fortunately a young gentleman, a resident of the town, Dr. Gage, who is intimate at the fort, and who is always ready gratuitously to lend his assistance. The Fort, however, is generally so healthy as to be *quite safe* in the hands of the surgeon. From this account you will hardly expect books of any sort to have been kept—the truth is there had been none, and the new forms and instructions had not been received.

From Castine I retraced my steps to the south and west, and travelling through the rich and delightful country that borders the Penobscot Bay, by the way of Belfast, Thomaston, Augusta, Hallo-

[26] Luther Leonard of Vermont. Capt. light artillery. He was honorably discharged in 1821 and became an ordnance storekeeper in 1846, retiring at the outbreak of the Civil War. Died 1865.

[27] William Ballard of Massachusetts. Post Surgeon in 1818. Resigned 1822.

well, Wiscasset and Brunswick, returned to Boston. After resting a few days here, I proceeded to Newport, Rhode Island, where a very different order of things awaited my inspection. Dr. Turner [29] the Post Surgeon, is a gentleman eminently qualified by talents and experience, for his station. The Hospital is a neat and convenient building, wholly detached, and situated at some distance from the Fort and barracks; sufficiently extensive, perhaps, for ordinary times, but too contracted for the accommodation of so large a garrison during the prevalence of much sickness. It has a spacious garden appropriated to it, in a state of neat and profitable cultivation under the direction of the surgeon. The land upon which the principal Fort stands, is very small, containing not more than five or six acres, open in front to Naragansett Bay, and having the town of Newport in the rear, from which it is distant two or three hundred yards. The soil is dry, light, sandy and fertile. A delightful breeze from the ocean, distant only about five miles, keeps the atmosphere pure and refreshing; and the garrison is generally as healthy as any other in the United States. The months of September and October are generally the most sickly. During these, bilious fevers and sometimes dysenteries, prevail, but seldom to any remarkable extent. Dr. Turner had just received your new forms and instructions, but had not had time to bring them into use. The hospital was uncommonly neat and well regulated, and the Doctor's dispensary was a perfect model of taste and convenience. The publick buildings do not afford quarters for the accommodation of the surgeon, who is therefore compelled to reside in town: the distance across the river, however, is so trifling, and the convenience of passing and repassing so great, that this circumstance occasions no interruption to the regular performance of his duties. The doctor complains that his supplies of medicines and stores, are not always sent to him with regularity, and, indeed, most of the surgeons whom I have seen, make the same complaint. Whether this is owing to neglect any where, or whether it is the mere effect of unavoidable delays in transportation, I know not. The stores are every where of the best quality, and generally in sufficient abundance.

[29] William Turner of New Jersey and Rhode Island. He served as a surgeon's mate in the War of 1812 and became a Post Surgeon in 1816. He died in service in 1837.

At Fort Trumbull, New London, I found the hospital establishment in wretched condition. There is but one small room appropriated for the sick, and this was more crowded than a common lodging room ought to be. There were several cases of high bilious fever, and one or two of common intermittent in the hospital, which are here the usual autumnal diseases—the room, beds and bedding were very filthy, and the whole appearance was unfavourable. The surgeon, however, is not wholly blameable for this condition of his hospital. It is almost impossible, even with the strictest care, when there is but one small apartment for the reception of various orders of patients, which serves as kitchen, wardrobe, and refectory, to keep it in a proper state of cleanliness. The supply of bedding was barely sufficient for the number of beds in use, without allowing for necessary changes; and the soldiers themselves appear to have been indulged in a habit of careless indifference to personal cleanliness. These are obstacles against which it is difficult for a surgeon to contend, unassisted by the proper authority. Dr. Cunningham [29] is an old man, not much accustomed to the discipline of the camp; who entered the service at a very late period of life, having resumed the practice of his profession after an interval of many years, in which he was engaged in other pursuits. He has a good sound understanding, improved by general reading and long experience, but his inclinations, or adventitious circumstances, have led him rather to the study of mechanical philosophy, and political economy, than to his profession, in which his reading has not kept pace with the later improvements. He is too old to be very alert or active in his duties, and too estimable for his character of probity and general usefulness to merit any severity of censure. He complains that his requisitions have not been attended to, and that he had received no supplies of medicines or stores, for nearly two years, though his returns have been regularly made. The post certainly wants the attention of government; and a proper building for the accommodation of the sick is essential, before we can justly blame the surgeon for the deficiencies of his department. The garrison is generally healthy, except for six or eight weeks in Autumn, when bilious and inter-

[29] Dr. Cunningham. There is no record of this officer. He probably never received a commission in the Regular Army.

mittent fevers, dysentery, and jaundice are almost as much as in our southern climate. Fort Trumbull is beautifully situated on a point of land running into the Thames river, so as to form a basin on either side. It is distant about a mile from the town, and two miles from Long Island Sound, over which it has an extensive and delightful prospect. I found nothing worthy of remark in the character of its soil or productions.

From New London I took the steamboat by the way of New Haven, to New York, and visited Governor's Island on the 10th Inst. The Hospital here, under the charge of Dr. Swift,[20] offered the most satisfactory evidence of his good management, and judicious system of arrangement. It is well situated, airy, convenient, and sufficiently spacious—the rooms are well arranged, and every thing about it assured me that the sick received all due attention. The cases in it were chiefly chronic, the garrison generally enjoying the most perfect health. The doctor had not opened his new books, which had just been received.

On Bedloe's Island,[21] too, I found every thing in good order. The Hospital is very small and inconvenient; but as far as it depended on the surgeon, Dr. Sackett,[22] nothing could be objected to its arrangements. The garrison at this place, I think required a much larger building for the accomodation of its sick—four or five patients are as many as can with propriety be crowded into it; and it not unfrequently happens that four or five times that number require all the comforts of a hospital establishment. Dr. S. seems to be a young man of talents, and the state of his department shows him to be attentive to his duties.—These two posts are so well known to you, and come so immediately under the constant inspection of the general officers, that I deem it unnecessary to extend my observations upon them further. The character of Dr. Swift is too well established

[20] Foster Swift of Massachusetts. Surgeon's mate 1814. Post Surgeon 1816. Died in service 1835.

[21] Now the site of the Statue of Liberty.

[22] John H. Sackett of New York. He entered the service as a surgeon's mate at the outbreak of the War in 1812, and was promoted post surgeon in 1816. He apparently justified Dr. Watkins' expressed doubts for he was discharged shortly after the reorganization in 1821 and died a year later.

to require my comments, and I had only a few days personal acquaintance with Dr. Sackett, which was hardly sufficient to enable me to penetrate beyond the *surface*.—He has the *appearance* of being wild and dissipated; he seemingly possesses talents and activity, is very young, and if he should be what his appearance denotes, a few years may change all that is blameable in his habits, and bring his talents into honorable notice.

At Fort Mifflin, near Philadelphia, the building used as a hospital, is totally unfit for that purpose, both in situation and structure. It is too small to accommodate more than half a dozen patients, is an old frame building, and planted in the midst of a marsh. The locality of Fort Mifflin, subjects its garrison, as you must be aware, to all those diseases arising from miasmata, fogs, impure water &c. and there is scarcely a month in the year when the number of sick does not exceed the capacity of the hospital. From July to the middle of October the barracks are necessarily as much crowded with sick as the hospital, and I need not enlarge upon the serious difficulties which are thus thrown in the way both of patient and surgeon. Without the falls of the Fort, there is no proper place on Mud Island for the site of a hospital, and there seems to be scarcely room within for any additional building; but on Provence Island, at a convenient distance, and where the surgeon now resides there is already a house, the property I believe of the United States, which at a little expence might be made a commodious and agreeable hospital. The ground in the vicinity is dry, the facilities of removing the sick to it across the gut which divides the two islands, are sufficiently great; and it is at all times under the surgeon's eye. This is a matter I think of considerable importance, and cannot too soon claim your attention. Dr. Day [83] has been but a short time at the post—to Dr. Smith[84] therefore, his predecessor, is due all the credit of the elegant arrangements of the Surgeon's apartment within the Fort. The near vicinity of an assistant apothecary, makes it easy to procure the medicines and stores, which the surgeon required, and the sick appear to want nothing but a more convenient and comfortable house. Dr. Day is

[83] Sylvester Day of Vermont. He entered the service in 1807 and died in 1851, having served as Assistant Surgeon during the last thirty years of his life.

[84] Samuel B. Smith of Pennsylvania. Post Surgeon 1816. Died 1834.

attentive, kind and feeling in his treatment of them, and seems to be skilful in his profession.

Dr. Smith, who preceded Dr. Day at Fort Mifflin, now superintends the recruiting service in Philadelphia, and has also charge of the Arsenal near Frankfort. The work on this having been suspended, and the number of artificers very much reduced, the services of the surgeon are seldom called for. The handsome manner, however, in which Dr. Smith has disposed the rooms appropriated to his use, the regularity of his books, and accounts of issues and expenditures, deserve all that can be said in approbation.—I have already had occasion to give my opinion of the merits of Dr. Smith to the war department, which it cannot now be necessary to repeat.

The Arsenal near Baltimore is perhaps one of the most healthy situations in our state; but whether from the peculiarity of the labour, in which the men are employed, or from the greater difficulty of restraining their habits of intemperance, the surgeon's books and reports present a worse aspect, in proportion to the number of the garrison, than almost any other post in the division, with the exception of Fort McHenry. The number of men, I believe, has seldom exceeded thirty-five or forty; and of these seldom less than ten, and often twenty or thirty, are on the surgeon's report. The great majority of the cases reported are called *dysentery*, and only two or three bilious remittent, or intermittent fevers. In the state of Maryland, particularly in those parts of it contiguous to the waters of the Chesapeake, the dysentery is seldom an idiopathick disease. It either follows bilious intermittent and remittent fevers, or it supervenes upon diarrhoeas produced by causes which have no influence on the state of the bile. In neither of these cases is it contagious, which it always is when a primary disease. Diarrhoeas are often mistaken for dysenteries, particularly when they follow that state of indirect debility produced by intemperance. The methods of cure of these two diseases are entirely different. The remedies which would remove the one, never fail to aggravate the other.—The inhabitants in the vicinity of the Arsenal enjoy good health, which not only establishes the fact that the causes of disease there are purely local, but that they are *personal*, or existing separately in each individual, and these causes, I think, may be distinctly

traced to intemperance.—Dr. Monroe,[85] who has the care of this place, is a young man of ordinary talents, and not very well grounded in his profession; but he is attentive to his duties, and has been generally successful in his practice. His books exhibit an economical and judicious expenditure of the medicines and stores.

The garrison of Fort McHenry suffers more in the autumnal months than any other in the Northern Division; and for the two or three last years, a disease has prevailed epidemically, to an alarming extent, which is elsewhere scarcely known, or known only as an attendant symptom of some more formidable disease. This is a *constipation of the intestines*, which seems to be the primary and sole affection. It comes on generally with a griping in the abdomen, and all the usual symptoms of bilious cholic—all efforts to procure an evacuation of the bowels are vain; a violent pyretica of the typhoid character supervenes, which rapidly runs its course, and the patient dies on the fifth or seventh day, unless the constipation is removed. This prevails to such an extent, that from the middle of July to the end of October, out of a hundred and twenty men, there are frequently not enough left well, to fill the daily guards. Dr. Stewart,[86] whose long experience and close attention to his duties at this post, entitle his opinion to the most respectful attention, seems to consider the water as a principal cause of this extraordinary disease. For many years—from the establishment of the fort, indeed, until the last war—the garrison of Fort McHenry was supplied with water from the city of Baltimore; all that could be procured within the publick ground being found to be brackish, and combined with many impurities, which rendered it unfit for any culinary or domestick purposes. In 1813, Colonel Beutalow,[87] then Quartermaster General of this district, supposed that by digging to a depth below the bed of the river, pure water might be found in sufficient abundance for the supply of the garrison, and the advantages which success promised, were sufficient inducement to make the experiment. A

[85] Thomas J. C. Monroe of Virginia. He began his career in 1811 and was in and out of the Service several times. He was Post Surgeon in 1816, was retained in 1821 and died in Service in 1839.

[86] William Stewart of Bahama Islands and Maryland. Post Surgeon 1818. Died 1823.

[87] Colonel Beutalow. No record can be found of this officer.

well was dug at great labour and expense, and at the depth of ninety-five feet, after passing through a variety of strata of clay, marsh, mud, iron, *charcoal*, sand &c a vein of water gushed upon the labourers in such force and quantity, that they were obliged to ascend with rapidity to avoid being overwhelmed. This water soon filled the cavity to within a few feet of the mouth, and was at first free from any apparent impurities. A pump of a new construction, the cylinder of which was iron, was fixed in the well, and the garrison felicitated themselves upon now having a full and independent supply of this essential article. In a short time, however, the chalybeate taste of the water became so strong that it was disagreeable to drink it—upon its standing an hour or two in a vessel, a disposition of ferruginous matter was made, nearly equal to 1/20th of its bulk; and as this was ascribed entirely to the iron cylinder, that was removed, and a wooden one substituted. But the water still retained its iron taste, though in a slighter degree; and the deposition from it was less abundant—scarcely perceptible at all after the pump had been much worked. On analysis it was found to contain but a very small portion of iron, and was in other respects as pure as the best water in our city. It has been constantly used since by the garrison, and except to a stranger has no disagreeable taste. It is doubtful then, whether there can be any secret quality in this water to produce such powerful effects; while on the other hand it is certain, that the disease in question was never observed to prevail before the well was used.—I am, myself, inclined to think that the constipation of the bowels is merely symptomatic, produced by a peculiar state of the bile, and of course referable to all those causes which affect the bilious secretion. At Fort McHenry these natural causes are aided by habits of inveterate *drunkenness*; for I never, among the same number of men, heard of so many addicted to intemperance. The facilities of procuring liquor are very great, and the officers have been generally very indulgent.—The practice which Dr. Stewart has adopted, is to administer a strong emetic immediately, to apply successive . . . . . upon the abdomen, and give large doses of calomel: to this he sometimes added the warm bath and repeated enemas. This practice has generally proved successful; at least the Doctor has lost very few patients, in proportion to the number under his care.—

In the accounts of expenditures exhibited by Doctor Stewart, there appear to be enormous issues of *spirit* and some other articles; but this is readily accounted for in the *old-fashioned* practice adopted by him, of giving to all his patients admitted into the hospital, daily doses of bitter tinctures, upon the preventitive power of which he places great reliance. His shop and show room are generally well supplied; and there is not a post in the division where more strict attention is paid to the comfort of the sick. Dr. Stewart is a very old man, and has the entire support of an uncommonly large family—he has always resided in town; but I believe no instance has ever occurred of his not making a daily visit to the Fort. He has been permitted by the government to enjoy the post of Health Officer to the Port of Baltimore; [38] but this so far from interfering with his publick duties, makes it necessary for him, from the 1st of April to the last of October in each year, to be at Fort McHenry, from sunrise until sunset every day, so that it is not possible the publick service can suffer by this indulgence to an old and faithful publick servant.

At Annapolis the diseases are very nearly of the same nature with those at Fort McHenry; and during the present autumn, Dr. Wallace [39] informed me, that he has had to contend against the same obstinate constipation of the bowels. He has considered it only as a symptom of the common bilious remittent fever, and has treated it with the usual remedies for the latter disease. Both these posts are very much exposed to all those causes which affect the biliary secretions, and during the latter months of summer and autumn, the surgeon has scarcely a moment's interval of repose: the consequence is, that the expenditure of stores and particular medicines, as appears by the books, is almost ten times greater than at most of the other posts, where the diseases are common inflammatory fevers, catarrhs, consumptions, &c.—I have so often had occasion to speak of Dr. Wallace in terms of the highest commendation, that I think it unnecessary now to enlarge upon his merits; more particularly since,

[38] Undoubtedly the remuneration of this officer was very necessary, for the pay of medical officers was so low that outside practice was almost obligatory in order to keep body and soul together.

[39] Joseph Wallace of Maryland. Promoted Post Surgeon in 1818. Resigned from the Service in 1827 to enter private practice.

during a personal interview with you a few months ago, I learned that his promotion was contemplated. He has seen more active and various service, since he has been in the army, than almost any surgeon in it, and no one has more uniformly acquired the confidence and esteem of the officers with whom it has been his fortune to serve.

Having visited Fort Washington only a few weeks before I set out on my tour, and reported my views of it in a personal interview, I have concluded not to delay this report until I visited it again, but to make a supplementary report to you on it, if I should find any thing to require it on inspection.

I have then, Sir, given you my views of the different posts of our department, as far as it was possible for me to form them on a first inspection. You must be aware that it will require more than one visit to become sufficiently acquainted with the medical topography of any place, to give a very satisfactory account of it; and that a longer intimacy with the surgeons is essential to the formation of a correct judgement of their respective merits and qualifications. I can only consider this report, therefore, as the outline of a plan to be filled up upon further inspections, and as such I must beg you to receive it.

I have the honour to be
Sir,
Very respectfully
Yr. ob't. S'v't.—
T. Watkins. Ass. Sur. Genl.
U. S. Army.

Dr. Joseph Lovell.
Surgeon Gen.

P. S. I neglected to mention in its proper place that on a casual visit to Pittsfield, in Massachusetts, I became acquainted with Doctor Sterne,[40] one of the mates of the 6th Infantry. He was stationed then on the recruiting service. I cannot forbear to mention that his talents and acquirements, and his polite and gentlemanly deportment

[40] William Sterne of Massachusetts. Surgeon's mate 1814. Post Surgeon 1818. Despite Dr. Watkins' plea, Dr. Sterne was discharged on the reorganization of the Army in 1821.

left the most favorable impression upon me. I think I may venture to add, that he deserves your particular notice.

Here ends the narrative. There is no record of future inspections by Dr. Watkins. In 1821 he returned to civil life after an Army service of three years. Undoubtedly he lived a useful, professional life for the more than thirty-four years that remained to him. Unfortunately no likeness of him has been found after extensive search, and if his portrait exists its location is unknown to his biographers. That he was a man of erudition, energy and talent is evident. His brief experiences with our early military posts serve to bring back an almost forgotten picture of American life of more than a century ago.

THE GENUINE WORKS OF HIPPOCRATES

LUDWIG EDELSTEIN

During the last few decades the belief has been current that none of the so-called Hippocratic writings could be ascribed with any certainty to Hippocrates himself. Philologists used to frown at those who did not share this scepticism, especially at physicians who still claimed authenticity for some of the Hippocratic books.[1] In recent years a decided reversal of this attitude has taken place. After Wellmann had dared again to assume the genuineness of some Hippocratic treatises and had been acclaimed by Wilamowitz,[2] various new lists of the genuine works of Hippocrates have been proposed within a rather short period of time by K. Deichgräber, Die Epidemien und das Corpus Hippocraticum, *Abhandlungen der Preussischen Akademie der Wissenschaften,* 1933, *Phil.-Hist. Klasse,* Nr. 3; M. Pohlenz, Hippokrates und die Begründung der wissenschaftlichen Medizin, Berlin, 1938; and W. Nestle in an article with the title " Hippocratica ", *Hermes,* 73, 1938, 1 ff. Now those philologists or historians of medicine or physicians who do

[1] W. Schonack, *Janus,* 14, 1909, 664: " In dieser Hinsicht besteht ein scharfer Gegensatz zwischen Medizinern und Philologen. Die Mediziner, für die das Hippokratische Corpus über zwei Jahrtausende ein Wissensschatz von unnennbarem Werte gewesen ist, . . . wollen mit Gewalt wenigstens einige Schriften als echt festhalten, während die bösen Philologen in ihrem Skeptizismus so weit gehen, dass in ihren Kreisen, soweit sie sich mit medizin-historischer Forschung beschäftigen, eine Meinung herrschend geworden ist, die sich kurz und bündig so ausdrücken lässt: ' Nichts von allem, was uns erhalten ist, ist eignes Werk des Hippokrates.' "

[2] M. Wellmann, *Hermes,* 64, 1929, 16 ff.; U. v. Wilamowitz, *ibid.,* 480 ff. Wellmann's theory was refuted by O. Regenbogen, *Quellen und Studien zur Geschichte der Mathematik,* Abt. B, 1930, 132, 1. Before Wellmann an attempt at determining genuine works of Hippocrates was made by H. Schöne, *Deutsche Medizinische Wochenschrift,* 1910, 418; 466. Schöne, however, considered as truly Hippocratic not a book of the *Corpus Hippocraticum,* but a treatise which does not belong to it. His view was opposed by H. Diels, *Sitzungsberichte der Preussischen Akademie der Wissenschaften, Phil.-Hist. Klasse* 1910, 1140 ff.; 1148. Hippocrates-criticism up to the time of Littré is summarized in his edition of the works of Hippocrates (*Oeuvres Complètes d'Hippocrate,* I, 1839, 154-199).

not admit the authenticity of at least a few of the so-called Hippocratic writings are frowned at and reprimanded because of their exaggerated and unfounded scepticism.[3]

As regards the methods used as well as the results attained by these recent inquiries, their similarity to those of Littré is striking. For it is in accordance with Littré's procedure that Deichgräber, Pohlenz, and Nestle discard the evidence of tradition transmitting a great number of books as the works of Hippocrates and aim at establishing the authenticity of Hippocratic books only through Pre-Alexandrian testimonies about his doctrine.[4] Moreover, while Littré took as genuine: *Ancient Medicine*, *Prognostic*, *Aphorisms*, *Epidemics I* and *III*, *Regimen in Acute Diseases*, *Airs Waters Places*, *Joints*, *Fractures*, *Instruments of Reduction*, *Wounds in the Head*, *Oath*, *Law*,[5] Deichgräber counts among the genuine works:

[3] Deichgräber, 7: "Und doch ist diese Skepsis, so behaupte ich, im Grunde nicht berechtigt. Wenn die Philologie den Masstab anlegt, nach dem sich ihr Urteil zu richten hat, dann muss sie zugeben, dass ihre Skepsis unberechtigt oder doch voreilig ist." Pohlenz, 1: "'Hippokrates ist zur Zeit ein berühmter Name ohne den Hintergrund irgend einer Schrift,' stellte Wilamowitz 1901 fest. 'Wir wissen von Hippokrates nichts, als dass er gelebt hat,' schreibt Henry E. Sigerist 1932 in dem Buche, in dem er Leben und Werk der 'Grossen Ärzte' schildern will. Und solche Urteile können wir heute allenthalben von Philologen wie von Medizinern vernehmen. Lähmend hat sich diese Skepsis auf die Forschung gelegt . . . Ist diese Bankrotterklärung der Forschung berechtigt?—" Nestle, 35: ". . . nach der lange herrschenden absoluten Skepsis . . . ⟨werden⟩ wir als echt anerkennen . . ." It is then appropriate that the latest publication of an English translation of Hippocratic treatises comprises as genuine the works which were attributed to Hippocrates by Adams in his translation of the genuine works of Hippocrates (*Medical Classics*, III, 1938, I, V, referring to F. Adams' conclusion in *The Genuine Works of Hippocrates*, I, 1886, 105-106 [repeated from I, 1849, 129-30]).

[4] Cf., e. g., Pohlenz, 63: "Die antike Überlieferung entscheidet in diesem Falle (sc. in the question of authenticity) nicht." 79: "Plato und Aristoteles sind nicht nur die ältesten und sichersten, sondern sogar die einzigen Zeugen, auf die wir uns verlassen können, wenn wir über Hippokrates Authentisches feststellen wollen." Cf. Deichgräber, 7; 146; 162. As regards Littré cf. *l. c.* I, 292. Adams opposes Littré's claim that the Pre-Alexandrian testimonies are superior in value to any other principle of criticism; to him ancient evidence of the genuineness of books has to be accepted, if it cannot be disproved (*l. c.* I, 1849, 47; cf. the interesting argument, *l. c.* 29, referring to Littré, I, 171). But according to ancient tradition the authenticity of each book has been disputed, cf. *Realencyclopädie der Klassischen Altertumswissenschaft*, Supplement VI, 1936, 1315-1317.

[5] *L. c.* I, 293; cf. 434; the coincidence of Littré's results with those of the modern interpreters is stressed by Deichgräber, 169-170, and Nestle, 35, themselves.

Epidemics I and *III*, *Epidemics II*, *IV*, and *VI*, *Humours*, *Surgery*, *Instruments of Reduction*, and finds a close relation between these books and *Prognostic*, *Fractures*, *Joints*, *Nature of Man*, finally *Airs Waters Places*, *Sacred Disease*, and even *Epidemics V* and *VII*.[6] Pohlenz holds to be authentic: *Sacred Disease*, *Airs Waters Places*, *Prognostic*, *Epidemics I* and *III*, he is still undecided as to the authenticity of *Fractures* and *Joints*.[7] Nestle asserts the genuineness of *Prognostic*, *Epidemics I* and *III*, *Airs Waters Places*, *Fractures*, *Joints*, *Instruments of Reduction*, parts of the *Aphorisms*, *Sacred Disease*, *Regimen in Health*, and *Epidemics II*, *IV*, and *VI*.[8] Scholarship, then, seems to have returned to where it stood a hundred years ago.

Yet have these new attempts to identify books of Hippocrates really led to results which are convincing? It is this question which I want to discuss. In doing so I have no intention of throwing doubt upon the correctness of the concept of Hippocratic medicine which Deichgräber, Pohlenz, and Nestle presuppose in the solution of their task. This concept is, in the main, derived from the interpretation of what Plato says about Hippocrates in the *Phaedrus* and of what Meno relates about him in his history of medicine.[9] The understanding of these passages is difficult indeed; I must confess that I do not agree with their explanation as proposed by the three scholars.[10] But for the moment I am not concerned with the interpretation of these testimonies. I only ask whether Deichgräber, Pohlenz, and Nestle, according to their own presuppositions, have succeeded in showing that certain books can be regarded as the genuine works of Hippocrates, either with likelihood or with a high degree of probability or with certainty.[11]

[6] Deichgräber, 163; cf. 169-170. [7] Pohlenz, 79-80. [8] Nestle, 35.

[9] Plato, *Phaedrus*, 270 C-D; Meno's Iatrica, *Supplementum Aristotelicum* III, I, ed. H. Diels, 1893, V, 35 ff.; cf. Diels, *Hermes*, 28, 1893, 407 ff.; cf. Deichgräber 7; 149-160; Pohlenz 2; 65-79; Nestle 17; Nestle rather neglects the Meno passage.

[10] The reasons for a different interpretation of the passage in question are given by L. Edelstein, Περὶ *ἀέρων und die Sammlung der Hippokratischen Schriften*, *Problemata*, IV, 1931, 129-137, and *Realencyclopädie*, *l. c.*, 1318-1324.

[11] This distinction between likelihood, a high degree of probability, and certainty is to be found in the books under review. Deichgräber, 163, says: "Nur als *wahrscheinlich* möchte ich es bezeichnen, dass Hippokrates einen Teil dieser Werke selbst verfasst hat." Cf. 170: "Zwar bleibt auch jetzt noch unsicher, was wirklich

If Hippocratic medicine considers the human being in its dependence on the universe, methodically divides the parts of the body as well as their faculties, and explains diseases by the influence of air [12]—from which books is it that Plato and Meno themselves, to whom this concept of Hippocratic medicine is to be traced, gathered their knowledge about Hippocrates? This, no doubt, must have been the first question for Deichgräber, Pohlenz, and Nestle, as it was for Littré. But whereas Littré held that Plato referred to *Ancient Medicine* and consequently used this treatise as the standard for determining other books as Hippocratic,[13] the recent interpreters fail to find the writings which Plato and Meno read as those of Hippocrates. According to Deichgräber and Nestle the book that was followed by Plato cannot be pointed to; it is apparently not extant.[14] Pohlenz hazards at least a guess as to which it is, but he himself admits that he is not able to prove his thesis.[15] As regards the

Eigentum des Hippokrates ist"; Pohlenz, 79, calls the results of his studies: "... ⟨ein⟩ Ergebnis, das sich zwar auch nicht mit mathematischer Sicherheit erweisen lässt, aber bei dem Stande unsrer Überlieferung ein *Höchstmass von Wahrscheinlichkeit* beanspruchen darf." Nestle, 22, however, contends: "Denn der von Th. Gomperz noch vermisste Fall, dass ein 'zweifellos echter Grundstock hippokratischer Schriften *nachgewiesen* wäre ...' ist jetzt, seit Deichgräbers Forschungen, eingetreten ..."

[12] Cf. Deichgräber, 151; 156; Pohlenz, 68; 76; Nestle, 18; my characterization of their concept of Hippocratic medicine, is, of course, very general and abbreviated; details will be discussed later. Cf. pp. 243 ff.

[13] Cf. Littré, I, 294 ff. Littré did not yet have the history of medicine written by Meno (cf. I, 165 ff.), which was not found until 1893; he therefore could not take into account this testimony. Schöne's procedure (cf. *l. c.*) was not different from that of Littré; he, however, believed that Plato's words were to be found in a treatise not preserved in the *Corpus Hippocraticum*. The statement of Meno he declared to be incorrect, *l. c.* 418.

[14] Cf. Nestle, 18: "Welche hippokratische Schrift Platon im Phaidros vorgeschwebt habe, lässt sich nicht bestimmen." Deichgräber nowhere names the book to which, in his opinion, Plato is referring. That he thinks it lost is clear from his other statements; cf. especially 165, 1 and below p. 243, 26.

[15] Pohlenz, 78-79: "Ist da die Vermutung zu kühn, dass er (sc. Plato) mit dem merkwürdigen Worte 'Meteorologie' auf den Eingang der vielgelesenen Schrift (sc. Airs Waters Places) anspielte ... Und dass er dies deshalb tat, weil er diese Schrift für ein charakteristisches Werk des Arztes hielt, den er sofort als den Vertreter der wissenschaftlichen Medizin zitieren wollte? ... ein zwingender Beweis, dass Plato gerade die Schrift über die Umwelt (sc. Airs Waters Places) zitieren wollte, lässt sich nicht führen."

treatise which Meno believed to be genuine and which he reproduced in his account, there is general agreement that it has not been preserved.[16]

This is indeed a strange situation. The attempt is made, and its realization is claimed, of recovering a few Hippocratic writings according to the testimony of some early witnesses, although the books which these same witnesses have considered as Hippocratic, it is stated, can no longer be detected. Of course, it is possible that these treatises have been lost; it is certainly not very plausible that this is so. If the works of Hippocrates have been handed down, and if the *Corpus Hippocraticum* represents the collection of the Hippocratic works or of the works of his school, it is rather astonishing that just the books which Plato and Meno considered as genuine should not have been preserved in spite of the testimony of these two most important authors as to the value of the writings in question.[17]

But if it is impossible to determine the books which have been excerpted by Plato and Meno, nevertheless there are some writings, Deichgräber, Pohlenz, and Nestle claim, which reproduce Hippocratic ideas as represented by Plato and Meno as well as by others, and which fit the biographical data known about Hippocrates. These books then must needs be ascribed to Hippocrates. In this line of reasoning a few difficult problems are involved which should be made explicit before the success or failure of the argument as such can be judged. Scholars say: the *Epidemics* contain the Hippocratic doctrine that diseases are to be explained by air; furthermore they follow Hippocrates' scientific principles; the *Epidemics* therefore have been written by Hippocrates.[18] Granted that the premises of

[16] Deichgräber, 162: "Die Schrift, aus der das Hippokratesreferat des Menon stammt, befindet sich nicht unter den besprochenen Schriften, sie ist nicht erhalten." Pohlenz, 69: "Menon hält sich an eine uns verlorene Schrift . . ." Nestle does not deal with the Meno passage and the resulting problems; cf. p. 238, 9.

[17] Pohlenz, 69: "Dass die aristotelische Zeit noch in der Lage war, echte Schriften des Hippokrates, der ja bis tief ins vierte Jahrhundert gelebt hat, zu kennen und zu erkennen, müssen wir bis zum Beweise des Gegenteils glauben." This is certainly true, but the question as to why these writings have been lost remains unsolved.

[18] Deichgräber, 162: "Auch eins fehlte nicht ganz, was als Ergänzung so erwünscht wäre: die Pneumalehre." Deichgräber (*l. c.*) has before stated that

this statement are correct, is the conclusion drawn from them correct also? Is it not possible that other physicians held the same doctrines and methods, either independently or in dependence on Hippocrates, and that consequently the books in which they are to be found were composed by other physicians than Hippocrates? Fevers which recur every five, seven, or nine days are known to Hippocrates, as Diocles says, and they are mentioned in *Epidemics II*, *IV*, and *VI*.[19] To be sure they are known, not only to Hippocrates, but also to others; because they are referred to in some books, it does not follow that these books were written by Hippocrates. A certain method of setting a dislocation is described in *Fractures*; Diocles blamed Hippocrates because he used such a method.[20] Again, this method may have been adopted by many others. In short, medical practice and theory, the knowledge of material facts which can be shared by hundreds of physicians, cannot prove the individual authorship of any book.

But there are also biographical data which confirm the genuineness of certain writings, it is claimed. Hippocrates practised in Larissa; the *Epidemics* relate some case histories from Larissa; Gorgias was Hippocrates' teacher in rhetoric, the *Epidemics* to a

this theory "offensichtlich naturphilosophisch beeinflusst ist und auch noch naturphilosophisch gefärbt ist" and "der naturphilosophischen Methode, wie sie der Phaidros als Lehre des Hippokrates überliefert, voll entspricht." Pohlenz, 79-80: ". . . die Krankenjournale der ältesten Epidemienbücher, die jedenfalls ganz nach seinen wissenschaftlichen Gesichtspunkten angelegt und verwertet sind."

[19] Deichgräber, 162: "In eben diesen Epidemienbüchern wird ein fünf- sieben- und neuntägig wiederkehrendes Fieber angenommen, wird das gelehrt, was Diokles an Hippokrates' Fieberlehre auszusetzen hatte. Diese Beziehung hat schon Wellmann in einer Anmerkung zu dem Dioklesfragment vermerkt." Deichgräber believes that Diocles fr. 97 really is a verbal quotation in which the name of Hippocrates has been preserved. That this is hardly true has been shown *Realencyclopädie l. c.* 1308-9. Cf. also W. Jaeger, *Diokles von Karystos*, 1938, 230. But again I am proceeding from the assumptions as made by Deichgräber.

[20] Deichgräber, 162-3: "Zuletzt findet sich die Theorie, dass der Oberschenkel wieder eingerenkt werden könnte, in II. ἄρθρων." It is again hardly true that this passage (Galen XVIII A 731) originally contained the name of Hippocrates, cf. *Realencyclopädie l. c.* 1308. Pohlenz's judgment, 80, is more cautious: "Unter den sonstigen Schriften des Corpus sind es in erster Linie die chirurgischen Fachbücher, bei denen man an hippokratischen Ursprung denken kann. Denn an der Einrenkung des luxierten Oberschenkels, die dort gelehrt wird, hat nach Galen XVIII A 731 schon Ktesias Kritik geübt und dabei, wie es scheint, ausdrücklich Hippokrates genannt."

certain extent follow the stylistic rules of Gorgias; Hippocrates studied with Herodicus, the *Epidemics* are influenced by the dietetic doctrines of Herodicus.[21] I do not insist on the fact that even if these data are correct Hippocrates, certainly, was not the only physician who came to Larissa, not the only writer who imitated the style of Gorgias, not the only pupil of Herodicus. It is evident that the biographies were written at a very late date.[22] Their authors then already knew the *Corpus Hippocraticum*. Uncertain as they were about the genuineness of the Hippocratic books in particular, they believed in the authenticity of some writings, above all in that of the *Epidemics*. It is a priori probable, and in accordance with the general habit of these writers, that they derived their account of Hippocrates' life mainly from those books which they considered as genuine, that they invented stories by analogy, as Deichgräber himself stresses.[23] None of the data given in the biographies then can be used as proof for the genuineness of Hippocratic books unless it is shown that such data are based on evidence outside the Hippocratic works. This, however, is hardly possible for such facts as the relation of Hippocrates to his teacher, his travels, and so forth; especially since the sources of these biographies, as far as they can be ascertained, are mostly Hellenistic.[24] If one concludes from

[21] Deichgräber, 162: "Hippokrates hat nach der sicheren Nachricht der Biographie in Larissa in Thessalien praktiziert im ersten Drittel des vierten Jahrhunderts; Epid. III, wovon mindestens ein Teil um 410 geschrieben ist, enthält einige Krankheitsgeschichten aus Larissa. In Larissa dürfte Hippokrates mit Gorgias zusammengetroffen sein; Epid. II, IV and VI zeigen eigentümliche Stilkennzeichen, die an gorgianische Figuren erinnern und von gorgianischem Einfluss her verstanden werden könnten. Einfluss der diätetischen Lehre des Herodikos lässt sich nachweisen, der nach der Biographie Lehrer des Hippokrates war." Cf. also Nestle 37, 3. The biography by the way, only says that Hippocrates died in Larissa (Soranus ed. J. Ilberg, *Corpus Medicorum Graecorum* IV, 1927, 177, 4).

[22] Cf. *Realencyclopädie, l. c.*, 1295.

[23] In his discussion of the biographical data themselves, when not considering their value for the identification of books, Deichgräber, 148, says: "Auch die Nachricht, dass Hippokrates später bei Herodikos von Selymbria in die Lehre gegangen ist . . . mag noch zu Recht überliefert sein. Sie ist schwerlich aus der Erwähnung des Herodikos in Epid. VI nachträglich erschlossen. Wenn dann jedoch Gorgias und Demokrit als Lehrer der Rhetorik bzw. der Philosophie genannt werden, so wird man unsicher, da spätere Ausbildungsformen in die Vergangenheit zurückprojiziert zu sein scheinen."

[24] Cf. *Realencyclopädie, l. c.*, 1295.

the coincidence of the biographies and of certain books that these treatises are genuine, the argument runs in a vicious circle.

But to all that, one could reasonably object: even if it is true that a single medical doctrine, a single biographical fact does not demonstrate the genuineness of certain books, the case is different as soon as all or most of the theories ascribed to Hippocrates, all or most of the biographical data related about him are to be verified in some books. Faced with such overwhelming evidence, it is nonsensical to speak of mere chance, of eventualities which are not capable of proof either. This, I think, would be a justifiable objection. But the argument for the genuineness of some books, I repeat, is irrefutable only under the condition that nothing important is missing in these writings; the books to be ascribed to the author must at least express his doctrine in its entirety, not only in parts. Otherwise the proof will never be cogent.[28]

If one examines the studies of Deichgräber, Pohlenz, and Nestle from this point of view one comes to the conclusion that they consider such books as genuine works of Hippocrates which contain only parts of that doctrine which these authors themselves consider as Hippocratic; other very important parts are not contained in these books and it is difficult to understand how they could be fitted into their content. For it is only the dependence of the human body on the cosmos which the so-called genuine works show. The division of the body and its faculties—that means the discussion whether the body is simple or multiform, and if simple what power of acting it has; if multiform, to number the forms—this discussion is not contained in any of the so-called genuine works.[29] Yet Plato, as Deich-

[28] I agree with Deichgräber's methodical principle as it is formulated, 163, in his final conclusion: "Wenn jetzt die Lehren, die von den ältesten Zeugen und von der Doxographie dem Hippokrates beigelegt werden, mit denen der Epidemien und der mit den Epidemien zusammenhängenden Schriften übereinstimmen, *ohne dass man behaupten kann, dass etwas, was da sein müsste, fehlt*, glaube ich mit Recht, wenn auch wieder mit der nötigen Zurückhaltung, die aufgestellte Hypothese als verifiziert ansehen zu können."

[29] Deichgräber, 165, 1, says: "Ich weise noch darauf hin, dass die Verbindung der Diairesis und des ὅλον -Prinzips innerhalb des Corpus sich nur hier nachweisen lässt." Deichgräber is referring to *Nature of Man* which, according to tradition, he ascribes to Polybus. At any rate, this book cannot have been written by Hippocrates, in spite of its agreement with Plato in one point, because it explains diseases

gräber, Pohlenz, and Nestle claim, ascribes to Hippocrates a doctrine which combines meteorological medicine with logical analysis.[27] Furthermore, it is the explanation of diseases by air alone which is employed in the so-called genuine works of Hippocrates. The explanation of diseases by air secreted from the remnants of food or by the air taken in with food, is missing in these writings. Yet Deichgräber and Pohlenz themselves find such an explanation in Meno's account.[28] It is then necessary to maintain that what is

by changes of the four humors, not by means of air as did Hippocrates according to the given interpretation of Meno. That modern scholars reject this book, the authenticity of which was maintained by Galen (cf. Galen's commentary on *Nature of Man*, *Corpus Medicorum Graecorum*, V, 9, 1, 1914, especially 53, 17 ff.) who discarded the Meno testimony, is indicative of another difficulty which I want at least to mention. Granted that Hippocrates, as Plato says, understood the human body as part of the universe, in which way did he do so? Deichgräber, 165, 1, stresses that such a theory "dass die Erkenntnis der Natur des Alls Vorbedingung ist für die Erkenntnis des Körpers" may have two aspects: it may mean that the microcosm is a reproduction of the macrocosm, or it may mean "Der Körper ist von den μετέωρα und ἀστρονομικά abhängig." Deichgräber, Pohlenz, and Nestle, without giving any reasons, ascribe to Hippocrates the second theory. Nothing can be concluded from the Plato passage itself; for this passage describes only the method of approaching the problem and does not say anything about its solution. Since *Nature of Man* rather follows the macrocosm-microcosm theory this book, for the modern interpreters, cannot be genuine although it, and it alone, partly corresponds to their interpretation of Plato's testimony on Hippocrates.

[27] Deichgräber, 151: "Zuerst wird man feststellen dürfen, dass er (sc. Hippocrates) seiner Medizin einen naturphilosophischen Unterbau gegeben hat, der zugleich das Fundament einer Diairesis darstellte. Weiter kann man auf Grund der Angaben bei Platon sagen, dass Hippokrates gefragt hat, ob der Körper ein ἓν oder ein πολυειδές ist, und was aus dem Zusammenhang hervorgeht, dass er den Körper für ein πολυειδές erklärt hat, dass es für ihn εἴδη bzw. μέρη τοῦ σώματος gab. Er hat weiter die aktiven Kräfte und passiven Möglichkeiten jedes dieser εἴδη unterschieden und vielleicht auch dargelegt." Pohlenz, 76: "Aber diese Einsicht (sc. that neither body nor soul can be understood without the nature of the whole cosmos) bedarf beide Male noch einer Ergänzung. . . . so ist es eine selbstverständliche Parallele zur Erosrede, wenn Plato 270 d dazu übergeht, von den Teilen der Seele, ihren Funktionen, von ihrem Tun und Leiden, von der Art, wie man auf sie einwirken kann, zu reden. Denn über all dies muss der wissenschaftliche Psychagoge Klarheit haben, so gut wie der Arzt über die entsprechenden Organe und Vorgänge des Körpers. Deutlich ist auch hier das Vorbild der wissenschaftlichen Medizin (sc. Hippocrates), und ausdrücklich wird noch einmal auf ihre analoge Aufgabe hingewiesen." Nestle, 18, considers the division even as the foundation of meteorological medicine.

[28] Cf. Deichgräber, 156: "Es bleibt schon jetzt nichts anderes übrig, als anzunehmen, dass dem Hippokrates ursprünglich mindestens zwei Krankheitsur-

called the genuine work of Hippocrates gives only a very fragmentary reproduction of Hippocratic medicine. Important and characteristic features of his doctrine, as attested by Plato and Meno and as represented by modern interpreters, do not recur in these writings.[29]

It would hardly do to claim that the books preserved by chance must not necessarily reproduce all the views of an author. There are many treatises which are said to be Hippocratic; not even all of them taken together contain the doctrine of Hippocrates. Or should one suppose that Hippocrates could not express in two or three books what Plato and Meno in a few words expressed as the essentials of his theory? But apart from the fact that the proof

sachen zugeschrieben wurden, das Pneuma, das eingeatmet wird, und die φῦσαι, die aus der unverdauten Speise entstehen." The latter theory, by the way, is not to be found in any of the Hippocratic writings. Pohlenz, 68: "Nach Hippokrates haben die Krankheiten ihre Ursache in einer falschen Ernährung, durch die mit den Speisen in unzweckmässiger Weise Pneuma in den Leib dringt. Diese Erklärung beruht auf Hippokrates' Grundanschauung, nach der das Pneuma entscheidende Bedeutung für den Menschen hat. Es ist für ihn lebensnotwendig, kann aber innerhalb des Leibes bei anormalen Zustande auch störend und lebenshemmend wirken." That the air taken in with food may cause diseases is claimed in *Breaths* (*Corpus Medicorum Graecorum*,' I, 1927, 94, 9); it is one of the many possible causes of diseases mentioned in this treatise. Such a theory is not to be found in any other Hippocratic writing, neither in *Sacred Disease* nor in *Airs Waters Places*. Pohlenz, 74, says: "Eine einzige Schrift gibt es ausser der Epideixis περὶ φυσῶν, auf die Menons Charakteristik der hippokratischen Lehre haarscharf zutrifft. Das ist die Schrift über die Heilige Krankheit, mit der auch in dieser Hinsicht am engsten die Schrift über die Umwelt verbunden ist." But this he can say only because he is thinking not of air taken in with food, the Hippocratic theory on his reckoning, but of air breathed in by the body; his analysis, 71-73, makes this evident. Earlier, 71, he claims: "Und wenn nach der Schrift π. φυσῶν das Pneuma in allen Speisen, ja überhaupt in allen Dingen vorhanden ist, so entspricht das ganz dem Weltgefühl des Arztes, der zwar nur vom Feuchten ausdrücklich das Gleiche aussagt (gleichlautend Heil. Krankh. 13 und Umw. 8 S. 62, 16), aber auch lebendig schildert, wie beim Südwind das Pneuma die ganze Natur durchdringt und wandelt (Heil. Krankh. 13)"; this indicates the real situation. It is the book on *Breaths* alone which shows a similarity, at least in one respect, with the Menonian report on Hippocrates as interpreted by Pohlenz. But again this book which fulfills one condition cannot be regarded by him as genuine because it contradicts all the other assumptions made about Hippocrates' doctrine.

[29] In view of these fundamental omissions it is not necessary to dwell any further on the problems connected with the other testimonies and with the biographical data.

for the genuineness of the Hippocratic works is invalidated, at any rate, since these books, as they are, do not correspond to the entirety of the Hippocratic system—let one imagine that the author of the *Epidemics* asks, as did Hippocrates, according to Plato, " whether that which we wish to learn and to teach is a simple or multiform thing, and if simple, then to inquire what power it has of acting or being acted upon in relation to other things, and if multiform, then to number the forms; and see first in the case of one of them, and then in the case of all of them, what is that power of acting or being acted upon which makes each and all of them to be what they are "[30] The strict empirical observation of the *Epidemics*, the renunciation of every explanation, of every system, do they really go together with the scientific endeavor, the classification which Plato admires in Hippocrates?[31] I think to raise the question means to answer it in the negative. Or let one imagine that the author of *Sacred Disease* explains diseases by air excreted from the remnants of food or taken in with food. Does such an explanation really go together with the explanation of diseases by gall and phlegm as employed in this treatise? Again such a question must be answered in the negative.

The recent inquiries, then, have not succeeded in establishing with certainty, with a high degree of probability, or even with likelihood the genuineness of any of the so-called Hippocratic books. These writings cannot be called Hippocratic according to Deichgräber's, Pohlenz's, and Nestle's own presuppositions. They do not reproduce Hippocrates' ideas. Small wonder then that they are not the books which Plato and Meno considered genuine.[32] I feel, however, that the failure of the recent interpreters as of all the previous

[30] *Phaedrus*, 270 D: ἁπλοῦν ἢ πολυειδές ἐστιν, οὗ περὶ βουληθέντα εἶναι αὐτοὶ τεχνικοὶ καὶ ἄλλον δυνατοὶ ποιεῖν, ἔπειτα δέ, ἂν μὲν ἁπλοῦν ᾖ, σκοπεῖν τὴν δύναμιν αὐτοῦ, τίνα πρὸς τί πέφυκεν εἰς τὸ δρᾶν ἔχον ἢ τίνα εἰς τὸ παθεῖν ὑπὸ τοῦ, ἐὰν δὲ πλείω εἴδη ἔχῃ, ταῦτα ἀριθμησάμενον, ὅταν ἐφ' ἑνός, τοῦτ' ἰδεῖν ἐφ' ἑκάστου, τῷ τί ποιεῖν αὐτὸ πέφυκεν ἢ τῷ τί παθεῖν ὑπὸ τοῦ. The translation is taken from *The Dialogues of Plato* translated into English by B. Jowett, I[3], 1892, 479.

[31] It is interesting to compare the Hippocratic system with that of Mnesitheus, which according to Galen is the further explication of it; cf. the detailed division of medicine and diseases, fr. 3 and 4, Hohenstein (H. Hohenstein, *Der Arzt Mnesitheos aus Athen*, Diss. Berlin, 1935).

[32] Cf. pp. 239 ff.

ones is fundamentally due to the peculiar difficulties of the problem with which they are faced. For the task set for them is not to show the genuineness or spuriousness of some writings which can be compared with others whose genuineness is unquestioned. Rather is it demanded that without any possible comparison one of the books of Hippocrates be identified, one book which then in turn can be used as a standard for other identifications. In this respect the Hippocratic problem is entirely different from the inquiries about the genuineness of Platonic or Galenic books. Yet neither Plato nor Meno quotes verbally from Hippocrates' works; they seem not even to use the specific language of Hippocrates, but to write in their own terminology.[83] Littré, then, quite rightly claimed that the style of Hippocrates too had to be deduced from that writing which had been proved to be genuine. But if the style is unknown, if no verbal quotation is preserved, one is unable to recognize the hand of one specific author in scientific treatises which might have been composed by many different writers. Under these circumstances how can one ever hope to succeed in demonstrating the authenticity of Hippocratic books?

If, however, it is hard to give positive proof for the genuineness of any Hippocratic treatise, it is comparatively easy to ascertain their spuriousness. That they contradict the Platonic-Menonian conception of Hippocratic medicine or do not correspond to it, is sufficient reason for rejecting them. This conclusion is valid at least as long as the attempt to identify the genuine works of Hippocrates is based on external testimonies, not on the evidence of a tradition which has labelled some books Hippocratic. It may seem strange or astonishing that the writings of Hippocrates have been lost. But the works of many great scholars and philosophers of antiquity have been destroyed. The longing to read Hippocrates' own writings, the difficulty of becoming reconciled to the fact that they are not extant, should at any rate be no reason for setting up the methodological postulate that they must have been preserved.[84]

[83] As far as the Plato passage is concerned, this has already been pointed out by Littré, *l. c.* I, 305; the report of Meno obviously is only a summarizing of Hippocratic doctrine.

[84] Pohlenz, 1-2: "Es wäre eine schier unbegreifliche Tücke des Schicksals, wenn gerade die Werke des anerkannten Meisters spurlos verschwunden sein sollten.

Whether or not some of the so-called Hippocratic books were written by Hippocrates certainly "is a matter of merely antiquarian interest";[85] the solution of this problem does neither enhance nor depreciate Hippocrates' greatness or importance. Moreover, Hippocrates deprived of the books of the *Corpus*, but invested with the doctrine which tradition ascribes to him, does not live a shadowy existence either.[86] Plato and Meno give enough details so as to make clear the outlines of Hippocratic medicine. His scientific method, his explanation of diseases are known; his specific accomplishments can be fully ascertained if contrasted with the doctrines contained in the so-called Hippocratic writings; his importance for Greek medicine is indicated by the history of his influence on later generations.

An appreciation of the historical Hippocrates within these limits is incontestable; more knowledge about him and his works cannot be claimed with certainty. If such a judgment is called sceptical, it cannot be helped. As concerns the solution of scholarly problems, I do not see any difference or merit in their being positive or negative or sceptical. Whatever they are in this respect, they are true only if and as far as they are founded on reasons.[87]

Es ist also einfach ein methodisches Postulat, dass unter den uns erhaltenen Schriften auch solche von Hippokrates selber sein müssen. Und damit ist der Forschung eine Aufgabe gewiesen, der sie sich nicht entziehen darf, mag auch die Lösung noch so schwierig erscheinen."

[85] W. H. S. Jones, *Hippocrates* with an English translation (*Loeb Classical Series*), I, 1923, xxi.

[86] Cf. Jones, *l. c.* "the shadowy 'Hippocrates' of ancient tradition." This is true also against H. E. Sigerist, *The Great Doctors*, 1933, 36: "All that we certainly know of Hippocrates is that he lived, . . ."

[87] I note my agreement with Pohlenz, 2: "Natürlich ist der Wissenschaft nicht damit gedient, wenn sich kritiklose Traditionsgläubigkeit und dichterische Phantasie zu einem Hippokratesroman verbinden. Ihr Gang ist mühsamer und weniger kurzweilig."

IMMORTALITY THROUGH MEDICAL WRIT OF ERROR

Dionysius: A Portuguese Jewish Court Physician with Notes on Brudus Lusitanus, His Son, and on Pierre Brissot.

HARRY FRIEDENWALD

It strikes the modern reader as amazing that a fierce controversy about blood letting could have been conducted for more than a century, could have involved the most notable physicians of the 16th and 17th centuries, could have evoked most bitter enmities. It now appears as a tempest in a teapot unless we understand that it became one of the most hotly contested points of dispute between Arabic Galenism and Hippocratic medicine.

One of the foremost to challenge the Galenists was Pierre Brissot (1478-1522), professor at the University of Paris. A careful student of Hippocrates, he was impressed with the view that phlebotomy should be performed at a point near the site of inflammation. Later Greek writers departed from this view, contended that such bleeding causes increased congestion in the part inflamed and advised venesection at a distant part of the body. So there arose two parties in the 16th century and they fought under the respective banners, the "Derivation" (Hippocratic) and the "Revulsion" (Galenic).

In a severe epidemic of pneumonia in Paris in 1514 Brissot applied the Hippocratic method with apparently much success and championed it at the University. Though he won over two of his colleagues, the opposition was so intense and violent that Parliament prohibited the method.

Brissot thereupon went to Portugal and in 1518, during an epidemic in Evora, he again had the opportunity to apply this method of treatment. Again he met with strong opposition;—it was led by the court physician Dionysius who published a book of criticism. Brissot replied with his "Apologetica Disceptatio, qua docetur, per quae loca sanguis mitti debeat in viscerum inflammationibus, praesertim in pleuritide." [1]

[1] Paris 1525, 1538, 1630, Basel 1529. The 1630 edition contains Brissot's biography.

The Brissot publication did not appear until three years after his death. It is described as " brilliant but written in the manner of the period." Though the author was dead, the battle continued to rage. The matter was laid before the University of Salamanca which decided in Brissot's favor.

What is known about Dionysius to whose attack we owe the only book published by Brissot? Barbosa Machado [2] wrote that he was " a physician equally distinguished in the theory and in the practice of medicine " and he cites Nicolas Monardes [3] as authority that he published a book: " An in Pleuritide debeat sanguis emitti ab eodem latere, unde dolor pungit, an ex opposito." Nothing more. The " Summario da Bibliotheca Luzitana [4] repeats the title of Dionysius' book following Barbosa Machado; Sprengel [5] mentions Dionysius as court physician and as having published the treatise against Brissot. Bastos in his book [6] on the physicians and surgeons of the royal court of Portugal, makes no mention of Dionysius, nor is his name (or his son's) found in the Encyclop. Univers. Illustr. of Barcelona.

Hirsch's Lexicon [7] makes reference to Dionysius only in the articles on Brissot and in the paragraph on Manuel Brudus, " distinguished Portuguese physician of the 16th century, a son of Dionysius, professor of medicine."

Sousa Viterbo [8] was unable to find other biographical accounts but discovered interesting notes in State documents. From them we learn that Dionysius enjoyed high esteem and professional standing, was physician at the court of King Manuel [9] and of his successor

[2] Bibliotheca Lusitana, Lisbon, 1747.

[3] In Monardus' de secanda Vena in Pleuriti, Antwerp 1564, the only mention of " Dionysius medicus Lusitanus " was his name found on pp. 9r and 9v, together with the others who upheld the Arabic view.

[4] Lisbon 1786, Volume I, p. 361.

[5] Versuch einer pragmatischen Geschichte der Arzneykunde, Halle, 1827, 3rd edition, Part 3, p. 174.

[6] Nobiliarchia Medica, Noticia dos Medicos e Cirurgioes da real camara, Lisbon 1858.

[7] Vienna 1884-1888, Vols. I, p. 576 and VI, p. 563.

[8] Noticia sobre alguns medicos Portuguezes, Jornal da Sociedade das Sciencias Medicas de Lisboa, 1893.

[9] Under King Manuel he held " the office of Chief Physician and Physician to the King (o cargo de physico mor e o cargo de physico do rei), two distinct positions, which could be held by the same person." King Manuel died in 1521.

King John III;[10] he served Queen Catherine[11] and the Cardinal Infante Affonso, son of King Manuel, from whom special gifts and pensions were found recorded in letters patent. Dionysius' signature is found in some documents.

But the most interesting document which Viterbo gives in full is a letter of King John III concerning the testamentary bequests of his brother the Cardinal Infante Don Affonso. He died in 1522 and his executor found it impossible to carry out the bequests and brought action against the Crown. The King agreed to pay a certain portion of the bequests:

"And as the Licenciado Dionysio, my physician and surgeon, is one of the persons who had annuities from the said Cardinal Infante according to his will and he was to have twelve thousand reis annually during his lifetime. . . . I ordered a letter sent for a third of the said twelve thousand reis, of which it pleases me that the said Licenciado Dionysio shall have from me one every year from the first of January past of *this present year of five hundred forty eight* (1548) and forever throughout the days of his life, only four thousand reis which is a third part of twelve thousand reis that he was to have, which four thousand reis I order by this general letter shall be paid in the customs house of this city. . . ."

Viterbo is of the opinion that this letter proves that Dionysius was still residing in Lisbon in 1548. We shall presently find good grounds for regarding this as an error.

Viterbo closes his account with a statement concerning Dionysius leaving Portugal. He ascribes it entirely to the religious motive. "If Dionysius was not a Jew, he was at least a 'Christao Novo' and if he possessed a fortune, as everything obliges us to suppose, this was a constant temptation for the Holy Office. A Diploma of Medicine was no safeguard from clutches of the Inquisition. . . ."

[10] In 1530 King John "gave a letter patent for an annual pension of ten thousand reis in consideration of the services of Doctor Dionysius, my physician." In 1533 he was given a royal letter permitting his servants to carry arms at night to protect the doctor's person. Here he is described as "physician and surgeon of Cardinal Infante my greatly beloved brother."

[11] In December 1533 a pension of "ten *moios* (measures) of wheat to be delivered in January 1534 and annually thereafter was granted by the King to Dr. Dionysius, physician to the Queen in consideration of his services to her and to himself."

Lemos [12] in his excellent studies on Amatus mentions Dionysius and his son. He refers to a case in which he met Dionysius. Lemos' statements concerning Dionysius are chiefly based on Viterbo's studies. He is in accord with Viterbo, in regarding Dionysius as "certainly a Jew" (Amato, edition of 1904, p. 16) or a Christao Novo (Amato, edition of 1907, p. 74).

In the light of this information it is interesting to examine a few statements made by Amatus Lusitanus in his "Dioscorides" and his "Centuriae."

Amatus tells of the meeting with Dionysius in Antwerp in one of the first medical cases he published; this is the case that Lemos mentions. He reports that "two celebrated physicians" had been in attendance "one was Dionysius, formerly physician to the King of Portugal, who had come to Antwerp not long before. He is the one against whom Brissot, the Frenchman, a man who merited a longer life, had published a most learned Apologia concerning pleurisy. . . ." [13] Amatus was in Antwerp from 1533 until 1540 when he went to Ferrara. This furnishes definite evidence that Dionysius left Portugal during the period 1533-1540; Lemos states that the last pension Dionysius received was in 1534 and that he left for Antwerp soon afterward; [14] and not as Viterbo thinks after 1548. Amatus writes concerning the other "distinguished Portuguese physician" as of "equally great fame who had long practiced in Antwerp." It is not unlikely that he too was a Marrano; not a few of these secret Jews took great pains to maintain their *incognito*, even to adopting new names. A second reference is found in Amatus' Dioscorides [15] in the chapter dealing with "lentiles." Here we read: "Brudus Lusitanus, even though he has been often admonished by me, nevertheless will not abstain from or retract the foolish error, perhaps because of the opinion held by his father who was a great devotee of the Arabs; his name was Dionysius,[16] it was he who

[12] Amato Lusitano e o seu tempo, Porto, 1904, pp. 15-16 and Amato Lusitano, A sua vida e a sua obra, Porto, 1907, pp. 42, 73.

[13] Centuria I, Cur. 2. The first edition appeared in 1551.

[14] Lemos, Amato 1904, p. 16. In his Amato of 1907, p. 73, the date is misprinted as 1531.

[15] Liber II, Enarratio 101. This book was first published in 1553.

[16] It will not be inappropriate to mention here another reference which Amatus

once had a long disputation with Brissot the Frenchman concerning pleurisy; there exists an Apologia (i. e. defense) by each."

This citation shows that Amatus knew Brudus, the son, very well and that he had intimate relations and discussions with him before 1544 when Brudus' book first appeared!

The earliest references to Brudus after those of Amatus are only bibliographical: Gallus, Bibliotheca (Basel, 1590), Lindenius Renovatus de Scriptis Medicis (Nürnberg, 1686) and the second edition of Peter de Castro's Bibliotheca Medici Eruditi (Bergamo, 1742, p. 6) which praises highly this *opus aureum*.

The first biographical note which the writer has found is that of Jourdan's Dictionnaire des Sciences Médicales, Paris, 1821: BRUDO (Manuel), médecin portugais distingué, fils de Dionisio, professeur de médecine, qui vivait en 1555, abandonna le Portugal, et passa à Venise, où il se fit juif, conservant son nom propre, et changeant son prénom; il exerça la médecine avec un grand succès, et publia: De ratione victus in singulis febribus secundum Hippocratem in genere sigillatim, libri III. Venise, 1534, in-8°-Zurich, 1555, in-8°-Cologne, 1579, in-8°-Ibid., 1559, in-8°.
De praeceptorum ratione;
Il en est fait mention dans l'*Historia Judaica* de Salomon, fils de Virga, traduite en latin, par Gencius (Amsterdam, 1651, p. 338).

This account is the source for later encyclopedias of biography to the latest one, Hirsch's Biograph. Lexikon. The writer has been unable to discover the source from which Jourdan's material was obtained. But it contains several errors. The date 1534 for a first edition is a printer's mistake for 1544.[17]

Another is the reference to De praeceptorum Ratione; it is without date or place of publication. This is one of those amazing errors

makes to Brissot (Diosc. I, Ennarratio 23): "Brissot, a man gifted with great erudition who when he was in Portugal sailed from there to the Indies, eager to learn new things . . ." and Amatus mentions that Brissot saw there "Gumi . . . quot cancanum esse dixit." This establishes the fact that Brissot actually visited India long before the great pioneer medical botanist Garcia d'Orto (1534). This voyage is not mentioned at all in the current biographical accounts. Lemos states that Brissot "planned to go."

[17] The Army Medical Library possesses the editions of 1544 and 1559. Both contain the dialogue between Brudus and his father. The copy in the library of the writer is the Venice edition of 1559.

which constantly reappear. It is true that it appears in the Latin translation of the *Shevet Jehuda*,[18] a Hebrew chronicle published under the title Historia Judaica by Gentius in 1651 in Amsterdam. But further search proved that it was not found in the Hebrew original. The writer consulted Prof. Alexander Marx of the Jewish Theological Seminary (New York), as is his habit when in such difficulties, and received the solution: It was pointed out by Steinschneider (Geschichtsliteratur der Juden, 1905, p. 77) as due to Gentius' misreading the Hebrew word "Bedoro" (in his generation) as "Brudo"! Wolf (Bibliotheca Hebraea 1715, I, p. 949) the famous bibliographer of Hebrew literature was the first gulled and it was probably through his work that the Summario da Bibliotheca Lusitana (1787) and later Jourdan (1821) and the Historia Bibliograph. de la Medicine Espanola (1843) transmitted the fiction to later writers and to Hirsch.

In Brudus' De Ratione Victus we find a few interesting bits of biographic information, for the author has given us an introduction, in the form of a dialogue between himself and his father Dionysius. Brudus asks his father to advise him from out of his long experience of forty years of practice and of his untiring reading of Greek [19] and Arab works. He speaks of his father's "most distinguished name among Western physicians; one who knows the secrets hidden from others." Brudus' admiration for his father is also given expression elsewhere. "My father greatly excelled all his contemporaries in his ability to diagnose sepsis." [20]

The father appears proud of his son as an ardent student. At the close Dionysius speaks of his advancing age, he feels that "he is already in combat with the hand of death"—

He urges his son as "the third" to bear on the family tradition of medicine: "For a threefold cord is not quickly broken, as the wise Hebrew sayeth" (Quoting Ecclesiastes IV. 12).

It is interesting to learn that Brudus was of the third generation of physicians, but this was very common.

[18] The author was Solomon ibn Verga, a Spanish Jewish physician of the 15th and 16th centuries.

[19] Brudus himself was a great admirer of Hippocrates and cites numerous and long Greek passages in his book.

[20] De Ratione Victus, p. 91.

Nothing is known about Dionysius' later years,—whether he remained in Antwerp,—nor do we know more concerning Brudus. Silva Carvalho [21] states that Brudus practised medicine in England and in Flanders. There is abundant evidence of this in his book. He frequently refers to his medical experience in England, to cases treated, to English customs and characteristics; [22] his De Ratione Victus is divided into three "books"; the second and the third are dedicated "ad Anglos." There are fewer references to Flanders.

We cannot establish the period that Brudus spent in England. It was earlier than 1544 for that is the date of the first edition of the De Ratione Victus.[23] At this time there were few Jews in England so far as known.

Hyamson knows of but two in England at this period; Tremellius, a convert who was appointed Reader of Hebrew at Cambridge (1549) and one "Ferdinando Lopes, a Jewish physician, living in St. Helens, London" (1550), who "was arrested and tried . . . for a serious offense and . . . banished from the country." [24] This lends special interest to Brudus' sojourn and practice there. Indeed Amatus furnishes us with two additional names. One is that of "our friend" Petrus Fernandus who practised medicine with great success among the English in London and is now prospering in Venice." [25] This passage is found in a dialogue between Amatus and his friend and college-mate Ludovicus Minius.

The other name is that of Amatus' nephew Brandan mentioned frequently in Amatus' works.[26] He speaks of his practising medicine in England, mentioning London, and particularly Bristol in words that indicate that this lay in the immediate future.

We are not surprised therefore to read in Brudus' work in a chapter dealing with drinking habits in sickness: "As is the custom

[21] Historia da Medicina Portuguese, Lisbon, 1929, p. 19.

[22] De Ratione Victus, pp. 8, 92, 94, 97, 98, 99, 100, 128, 148, 152 (here he mentions little fish which the English call 'gudions').

[23] The Army Medical Library possesses a copy. Hirsch's Lexicon makes note of one of 1534 but this is probably a printer's mistake.

[24] Hyamson, History of the Jews in England, London, 1908, p. 124.

[25] Dioscorides lib. I, Ennar. 138.

[26] Cent. V, Cur. 4, 6, 16. He was the son of Amatus' brother Pedro.

of the exiles of Portugal who have their homes in England and Flanders." [27]

In gathering these notes concerning Dionysius we find that his name has been kept in memory almost solely by reason of his erroneous controversy with Brissot. Many others entered into the controversy which proved to be the birth pains of Modern Medicine. We have long since lost our interest in the dispute, the terms "derivation" and "repulsion" have lost their meaning for us. But we must bear in mind that new eras are not changed like old clothes for new; it is hard to discard views held long and firmly.

The book that Dionysius wrote has long been lost. The book in which Brissot replied is preserved in a number of editions [28] and has served as Dionysius' memorial.

In Dionysius and his son we find members of that body of Jewish physicians of Spain and Portugal, who acquired distinction in the land of their birth, who fled from the dangers of the Inquisition and wandered to other lands where they continued their medical work in practice and in publications.

[27] De Ratione Victus, p. 81.

[28] The curator of the Rare Book Collection of the Library of Congress reported that the 1525 and 1539 editions are in the possession of the Army Medical Library and the 1525, 1529 and 1622 editions in the British Museum.

Fig 1.

The Monument of Herman Boerhaave in Leiden.

UNIV. OF MICH.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

A BOERHAAVE PILGRIMAGE IN HOLLAND[1]

HENRY E. SIGERIST

On September 8th 1738 Herman Boerhaave wrote to Dr. Mortimer, Secretary of the Royal Society, the following letter:[2]

> "It is a year since age, application, and immoderate fatness have produced an utter ineptitude to any kind of exercise in such a heavy corpulent body, full of inert humours, and upon the least motion gasping for breath, with a pulse strangely irregular; but the most urgent symptom was the interruption, or stoppage of respiration on falling asleep, and the prevention of any rest by a sudden terrible sensation as of strangling. Upon which the abdomen and all the parts below it became dropsical; but notwithstanding the removal of these symptoms, there remain pain of the belly with great weakness and anxiety, a suffocating asthma; short are my slumbers, disturbed with dreams, the mind is incapable of any business; wearied with this conflict I gain no release, yet patiently wait the divine pleasure to which I am wholly resigned."

Two weeks later on September 23rd between four and five o'clock in the morning he passed away. He was in his 69th year and would have reached the age of 70 three months later. When he died Holland lost its greatest physician and the whole of Europe its clinical teacher.

It was obvious that the 200th anniversary of the death of Boerhaave would not pass unnoticed, and indeed the Senate of the University of Leiden, the Dutch Medical Association (Nederlandsche Maatschappij tot Bevordering der Geneeskunst), the Dutch Medical Journal (Tijdschrift voor Geneeskunde), and the Dutch Society of the History of Medicine, Science, and Mathematics invited the Dutch physicians to a formal exercise in the University of Leiden

[1] Read before the Johns Hopkins Medical History Club, on November 14, 1938.

[2] Ex Epistolis Nondum editis Analecta, in: Wm. Burton, *An Account of the Life and Writings of Herman Boerhaave*, 2nd ed., London, 1746, pp. 215-216, 69-70.

and to an excursion to all the places where Boerhaave had lived. They invited, in addition, representatives of the four countries upon which Boerhaave had exerted his greatest influence: Germany (Professor Paul Diepgen), Austria (Professor Karel Frederik Wenckebach), Scotland (Professor John D. Comrie), and the United States (Henry E. Sigerist).

These two days will remain unforgettable to all who had the privilege of attending the celebration. Europe was in a turmoil with every country mobilizing troops, but Holland seemed an island of peace. The organization of the meeting was perfect in every respect and the committee seemed to control even the weather that can be very nasty at this time of year. It was warm still, and in the morning a silvery mist was seen hanging over the flat land and the canals until the sun appeared and tinted the country with tender colors. The last flowers were fading in the fields.

On the morning of September 23rd we came together in Leiden, Boerhaave's city, where every corner, every stone carries his memory. The formal exercises were held in the Great Hall of the University Hospital which is the core of the Boerhaave-Kwartier, the new medical center, a campus that includes all departments of the Medical School. The members of the Leiden Faculty in academic gowns sat to the right. The foreign delegates and guests were seated in the front row, and several hundred Dutch physicians and their ladies had come to the meeting which was opened by the Rector of the University Professor P. C. Flu, who in warm words welcomed the guests and stressed the significance of the day. He was followed by the Minister of Education, His Excellency Slotemaker de Bruine who is a great orator and knows it.

Dr. D. Schoute then delivered the principal address commemorating Boerhaave and his work.[3] The tenor of his talk was a polemic against Daremberg and a discussion of the facts that had made Boerhaave a truly great man. When the master died he was universally praised and no superlative seemed strong enough to

[3] All addresses were published in the *Nederl. Tijdschrift voor Geneeskunde*, 1938, Vol. 82, pp. 4779-4912. A mimeographed English translation of Dr. Schoute's address was presented to the English-speaking delegates and copies were sent to the chief medical libraries of the United States.

describe him. Charles Daremberg in his *Histoire des Sciences Médicales* felt rather helpless when he came to a discussion of Boerhaave.[4] He found that the *Aphorisms* and the *Institutiones* possess neither profundity nor anything that surpasses ordinary human understanding, that they are neither novel in form nor sublime or unheard of in the doctrine they present. He stated that Boerhaave must have owned his fame for the simplicity of his life, his disinterestedness, his high qualities, strong sense of duty, enormous historical knowledge, and to the elegance and lucidity of his teaching. Dr. Schoute pointed out that this picture was completely erroneous and that Boerhaave's significance was to be sought first of all in the fact that he put medical education on an entirely new basis. A passionate teacher all his life, devoting every effort and every minute he could spare to his students, he laid the foundation for modern medical education.

It was then the turn of the foreign delegates. Professor Diepgen traced the very strong influence that Boerhaave exerted on German medicine. As late as 1770 Frederick the Great, commenting on a report of the Superintendent of the Prussian Universities, wrote: "In medicine the professors must adhere first of all to the methods of Boerhaave," and a century after Boerhaave's death Ludwig I of Bavaria had his bust placed in the Valhalla near Regensburg as the bust of a "great German man."

Professor Comrie pictured the foundation of the Medical School of the University of Edinburgh by a group of men who all had been students of Boerhaave. But he showed that the relations between Edinburgh and Leiden were not unilateral and that a Scotch physician Pitcairne was professor at Leiden and had some influence on Boerhaave.

My turn had come. I conveyed the greetings of the American Association of the History of Medicine which had commemorated Boerhaave at its Annual Meeting in Atlantic City on May 2, and I discussed Boerhaave's influence upon American Medicine. The number of American students who studied at Leiden in Boerhaave's days was not large and the chief influence was indirect through Edinburgh. Most of the men who organized the Medical Depart-

[4] *Histoire des Sciences Médicales*, Paris, 1870, Vol. II, pp. 889-890.

ment of the College of Philadelphia and constituted its first faculty were graduates of Edinburgh and had studied medicine under professors who were students of Boerhaave. It was chiefly in this way that the tradition of the school of Leiden was transplanted to America, and that Boerhaave's medical views dominated American medicine until they were superseded in the last quarter of the 18th century by the theories of Cullen and Brown which enjoyed a short but wide popularity.

Fig 2.

Depositing Wreaths before the Monument of Boerhaave.

The next speaker was Professor Wenckebach who spoke on Boerhaave and the Viennese School. In the middle of the 18th century medical conditions were extremely unsatisfactory in Austria and when Maria Theresa ascended the throne in 1740 she soon recognized that a thorough reform of the University of Vienna was essential if it was to remain a University in any sense of the word. Five years later she called a student of Boerhaave, Gerhard van Swieten, who reorganized not only the University but medical conditions at large. He in turn called one of his fellow students Anton de Haen to the

chair of clinical medicine in Vienna, and it was de Haen who initiated the tradition that made Vienna famous as a clinical centre throughout the world. It was a great pleasure to hear Professor Wenckebach

Fig 3.

Clock of the Medical School Building of the University of Leiden donated by the Students in Memory of Boerhaave.

discuss these developments, who is Dutch himself and who until his retirement a few years ago was professor of clinical medicine in Vienna thus holding the chair of de Haen.

The last speaker was Professor Dinger who had come from

Batavia and paid his tribute to Boerhaave in the name of Greater Holland. After the exercises we all went to the monument of Boerhaave (Fig. 1) that faces the entrance of the Hospital and wreaths were deposited in memory of the master (Fig. 2). This reminded me of another wreath that we had deposited in front of the same monument in 1927 when the International Congress of the History of Medicine was held in Leiden. Dr. Welch then was the speaker.

After a luncheon tendered by the Medical Faculty we assembled

Fig 4.

A Student Delegate dedicating the Clock.

in the Hospital garden for one more formal exercise. The students of the Medical School wanted to pay their tribute to Boerhaave's memory also. They collected funds among themselves to erect a clock in the tower of the Medical School building (Fig. 3). A student delegate spoke (Fig. 4). Dr. Maas, Superintendent of the Hospital, answered and in the name of the Hospital and Medical School accepted the clock which then was unveiled. It was a joy to see the young students, boys and girls, in the beautiful surroundings of the Boerhaave-Kwartier, and it reminded you of the fact that

the Medical School of Leiden not only has a great past but is a great medical centre still, worthy of its glorious traditions.

And then the pilgrimage began. It was to bring us to all the places

Foto Bleuzé

Fig 5.

Boerhaave's Tomb in the St. Pieterskerk, in Leiden.

where Boerhaave had lived, which was easy to achieve as he had never left his country. He was in touch with the whole world. Seeds were sent to him for the botanical garden from far remote regions

and he had a tremendous correspondence with many people who sought his medical advice, but it seems that the only journey he ever undertook was the trip to Harderwijk where he went for his medical degree. We first visited the St. Pieterskerk, a 14th century Gothic church in which Boerhaave is buried. His monument is an urn-shaped tombstone with figurines in relief representing the ages

Foto Bleuzé

Fig 6.

Boerhaave's Ward in the former St. Caecilia Gasthuis.

of man. The inscription reads *Salutifero Boerhaavii Genio Sacrum* (Fig. 5). Other famous Leiden scientists are buried in this church, such as Dodonaeus, Clusius, and Camper.

Our next visit was to the rooms in which Boerhaave gave his clinical teaching. They were two wards of six beds each, one for men, one for women, in the St. Caecilia Gasthuis. The building now contains workshops for unemployed and Boerhaave's ward serves as dining room (Fig. 6). Plans have been made for restoring the building and making it a museum. It was in this room that generations of physicians were trained in clinical medicine.

In buses we drove to Boerhaave's birthplace, the parson's house in Voorhout (Fig. 7). Boerhaave was born here on December 31,

1668. His father was minister of the church in that village, an educated man who had " a good acquaintance with the Hebrew as well as Greek and Latin languages, but excelled in his knowledge of history; and was no less remarkable for frankness and candour in general, than for the prudence of his oeconomy, and a tender exemplary behaviour to his numerous offspring." [5] And numerous it

Foto Bleuzé

Fig 7.

Boerhaave's Birthplace in Voorhout, near Leiden.

was. Boerhaave had six sisters and after his mother's death, when he was 5 years old, his father married again and had six more children. It was in this house that Boerhaave received his first education. His father intended him for the ministry also and with this view " he himself initiated him in grammar, according to the method of Vossius, and proceeded with him from the Colloquies of Erasmus to Terence, the Greek testament, and universal history, particularly Christiani Matthiae Theatrum; and with such success, that at eleven our youth was well versed in these, expert in the rules of the Latin

[5] Commentariolus De Familia, Studiis, Vitae cursu, etc. Propria Boerhaavii Manu conscriptus, Et post obitum inter eiusdem MSS. repertus. In: Wm. Burton, *l. c.*, p. 203, 3.

and Greek grammar, ready at translating and writing Latin, and not ignorant of etymological learning." [6] His hours of leisure were

Foto Bleuzé

Fig 8.

Boerhaave's Country House Oud-Poelgeest in Oegstgeest, near Leiden.

devoted to horticulture and it was in his father's garden that he first became a lover of the *scientia amabilis*, botany. A long illness inter-

[6] Wm. Burton, *l. c.*, p. 204, 4.

rupted his studies. It was in his own words " a malignant ulcer in his left thigh eluding the art of surgery and occasioning excessive pain." He finally cured it himself " by fomenting it continually with salt and urine," whereupon he conceived his first thought of studying medicine. At the age of 14 he was sent to school in Leiden and two years later he entered the University as a student of philosophy and theology. His father died when he, the oldest child, was not yet 16 years of age, and the family was left in a difficult financial situation.

Our next station was Boerhaave's country-house Oud-Poelgeest in Oegstgeest near Leiden (Fig. 8). The impecunious student of theology had become a world-famed wealthy physician. Patients from every country came to Holland to seek his advice: " From ten till twelve his consulting-room was thronged by those who sought his advice, for pressure of work now made it impossible for him to visit patients in their homes. Often enough the morning consultations outlasted the fixed hours, so that lecture time had come before he had had a moment in which to eat his dinner. At three in the afternoon additional patients began to arrive. What remained of his day was spent in an extensive correspondence and in his long-continued labors upon the writings of the Greek physicians—unless some distinguished patient dragged him away from his work." [7]

No wonder that " wealth flowed to him from all parts, and it was supposed that his only daughter would inherit a few tons of it." [8] Boerhaave purchased the beautiful country-house that we visited and where a reception was tendered to us by the present owner Mejonkvrouwe Willink van Bennebroek. The house is unfurnished at present and needs some repair, but is still a grand mansion, surrounded by an old garden with a pond in front, and with a beautiful view on the flat land that surrounds Leiden. In addition to this country-house Boerhaave had a city residence on the Rapenburg which we passed repeatedly without visiting it, however (Fig. 9).

The day ended with a banquet in Leiden, in the Huize Bruyns, a

[7] Albrecht Hallers Tagebücher seiner Reisen nach Deutschland, Holland und England 1723-1727. Mit Anmerkungen Herausgegeben von Ludwig Hirzel. Leipzig, 1883, pp. 38-39.

[8] Haller, Tagebücher . . . , p. 38.

club famous for its excellent cuisine, and it was a very great pleasure to spend a few hours with our Dutch friends who are doing such

Foto Bleuzé

Fig 9.

Boerhaave's Residence on the Rapenburg, in Leiden.

splendid work in medical history. J. G. De Lint who organized the Institute of the History of Medicine and Science at the University of Leiden died several years ago and was succeeded by F. W. T.

Fig 10.

F. W. T. Hunger and B. W. Th. Nuyens.

Hunger, the eminent historian of botany. B. W. Th. Nuyens is still very active and enterprising (Fig. 10) and the Dutch Society of the History of Medicine, Science, and Mathematics has a wide appeal in the country, meets regularly, and publishes its transactions with the Nederlandsch Tijdschrift voor Geneeskunde. The history of science has another centre of research in Holland in the "Nederlandsch Historisch Natuurwetenschappelijk Museum," in Leiden, an outstanding museum of the history of science with a staff of researchers who are approaching the subject from a broad philosophical angle. Dr. C. A. Crommelin is director of the Museum, Prof. C. J. v. d. Klaauw adjunct-director, and Dr. M. Rooseboom research-assistant.

The following day, September 24, we met in Utrecht from where we drove to Harderwijk, a small town of about 9,000 inhabitants in the province of Guelderland, located on what used to be the Zuider Zee and now Yssel Lake. Here on July 13, 1693 Boerhaave obtained his degree of Doctor of Medicine. The origins of the Academy of Harderwijk can be traced far back to the 14th century. In 1372 a grammar school was established in the monastery of the Franciscan friars. It must have been very popular during the Renaissance because in 1503 when a great fire destroyed the city and also the school not fewer than 350 pupils lost their lives. The school survived the catastrophe however and remained the centre of higher education in the province until it was replaced by the Provincial Guelder Academy in 1648, which lived with ups and downs until it was closed in 1811.

We assembled in the Town Hall and were welcomed by the mayor, a jovial gentleman who gave us some information about the history of the city, and, later, showed us the very interesting municipal museum. A local physician, Dr. C. P. J. Penning, then read a paper commemorating Boerhaave at Harderwijk. On July 12, 1693 Boerhaave arrived in the city, twenty-four years old, a Doctor of Philosophy of the University of Leiden and a Bachelor of Medicine. He carried with him his thesis *De Utilitate explorandorum in Aegris Excrementorum ut Signorum* which he defended the following day before the assembled faculty and student body of the Academy. He was examined about a case of apoplexy, about some Aphorisms

of Hippocrates and about the thesis itself. His answers must have been satisfactory because the *Album Studiosorum Academiae Gelro-Zutphanicae* in which his examination was entered bears the men-

Foto Bleuzé

Fig 11.

The Linnaeus Tower with the Bust of Linnaeus, at Harderwijk.

tion *Omnia exacte et solide*. Dr. Penning speculated as to how Boerhaave spent the night of his graduation day, whether in learned conversations with his professors or in drinking and feasting with

his fellow-students. It is well-known that the Harderwijk students were a rough gang. In Dr. Penning's words: " With unflagging zeal the Academical Senate fought against the evil of wantonness, noc-

Fig 12.

Bronze Tablet commemorating Boerhaave, on the Linnaeus Tower, at Harderwijk.

turnal uproar, vandalism, the catching and eating of somebody else's chickens, the so-called graduating of hens, fighting and drawing the rapiers; but all was without avail. Even the prohibition of all the

students' clubs has never been able to put an end to the life of the so-called Little Senate of the students with its seal representing the Goddess Pallas seated on a wine-cask encircled by the words: Sigillum majus Senatus minoris." [9]

Fig 13.

The Linnaeus Bust and the Boerhaave Tablet at Harderwijk.

We know from Haller's diary that student life in Leiden was somewhat different: " Leiden seems to have been made on purpose

[9] C. P. J. Penning, De Promotie van Boerhaave te Harderwijk. In: *Nederl. Tijdschrift voor Geneeskunde*, 1938, Vol. 82, p. 4898.

most convenient for students. Life is utterly informal and you may walk in the streets in your dressing gown without any trouble. You do not mix with anybody but your own kind, for the Dutch are cold and their women-folk reserved with the so-called Studiosi, a fact that saves a man much money and many hours in the course of the year. One student encourages the other with his example and he who does not work must expect a life of boredom and tedious idleness.

Fig 14.

Dr. C. Fehmers, President of the Nederlandsche Maatschappij tot Bevordering der Geneeskunst dedicating the Boerhaave Tablet, at Harderwijk.

No kind of dissipation is made easy. Wine and all luxuries are expensive. And, finally, the departments, the professors' zeal and the organization of the University are incomparable and if a man does not feel like getting ahead here he certainly will not anywhere else."[10]

And yet, when the students had passed their examinations they let loose in Leiden also—and they still do.

Boerhaave in all probability left the city the day after graduation and there has been some discussion as to why Boerhaave made the

[10] Haller, Tagebücher . . . , p. 274.

trip to Harderwijk, why he did not prefer to take his degree from his own university, Leiden. The answer probably is that graduation at Harderwijk was cheaper, and for an impecunious student like Boerhaave this meant a great deal.

From the Town Hall we walked to the old building of the former Academy. It was located in a church. Across the street was the Hortus Botanicus, with a tower that was used as a carcer, a jail for unruly students. Today the tower is adorned with the bust of another famous graduate of the Academy, Linnaeus, who took his degree in 1735 (Fig. 11). On the same tower a beautiful tablet in green bronze with Boerhaave's portrait in relief and an inscription in which the Dutch physicians pay tribute to the master was unveiled (Fig. 12) so that now Harderwijk's two greatest graduates are recorded on the same monument (Fig. 13). Dr. C. Fehmers, president of the Dutch Medical Association, dedicated the tablet (Fig. 14).

A luncheon was then offered to us, a real Geldersche koffietafel, in a garden restaurant on the shore of the Yssel Lake, and after that we sailed by boat from Harderwijk to Amsterdam. It was a delightful trip of several hours, and just at sunset we reached the city. This concluded our pilgrimage—and two enchanting days.

ANNOUNCEMENTS

American Association of the History of Medicine

The Council of the Association has elected the following organizations as Constituent Societies:

1. The Johns Hopkins Medical History Club.
   Delegate to the Council: Dr. Owsei Temkin
2. Institute of the History of Medicine of The Johns Hopkins University.
   Delegate to the Council: Dr. Henry E. Sigerist
3. Cordell Historical Society of the University of Maryland.
   Delegate to the Council: Dr. John C. Krantz, Jr.
4. The Innominate Society, Louisville, Kentucky.
5. The William Welch Society of New York University College of Medicine.

Applications of several other groups are pending.

The Council has further elected 51 new Active Members. A complete membership list will be published at the end of the year.

Members are reminded that the Fifteenth Annual Meeting of the Association will be held at Atlantic City, N. J., on Monday, May 1, 1939 and that those who intend to present papers should communicate as soon as possible with the President of the Association, Dr. Walter R. Steiner, 646 Asylum Avenue, Hartford, Connecticut.

The Association gratefully acknowledges the generous gift of $100.00 contributed by Dr. Charles W. Burr of Philadelphia.

Oklahoma City

We are glad to hear that a Medical History Club is in process of organization and that, as soon as constituted, it will apply for membership in the Association.

150th Anniversary of the Death of Petrus Camper

We received the following announcement:

Lectori Salutem!

The Faculty of Medicine of the University of Groningen has the honour to inform you that it intends, in collaboration with the

Society "Het Nederlandsch Tijdschrift voor Geneeskunde" (Netherlands Journal of Medicine) and the Society for the History of Medicine, Mathematics and Natural Science, to commemorate on April 29 and 30, 1939, the life and works of Petrus Camper, who died a hundred and fifty years ago.

The commemoration of this great physician, anatomist, obstetrician and artist, who for ten years was professor of medicine at Groningen, will take place in a solemn session of the Senate of Groningen University, and be accompanied by an exhibition of the complete works and drawings made by Camper.

At the session of the Senate, which will be held in the Aula Academica of the University on Saturday evening, April 29, addresses will be given by Dr. B. W. Th. Nuyens, of Amsterdam, and by various professors of medicine at Groningen.

The exhibition to be held at the Academic Hospital at Groningen will be open to all those interested on April 29 and 30, and later if desired. Here there will be brought together for the first time all the original drawings made by Camper with an artist's hand, both those in the fields of anatomy and raciology, and those of the many things he saw on his European journeys, all of them in the possession of the Library of the Netherlands Society for the Promotion of Medicine at Amsterdam, and of the University Library at Leiden.

At this exhibition there will also be displayed a number of preparations made by Camper and described or represented in his works, which by a happy accident escaped destruction in the fire of the Groningen University buildings in 1906.

On behalf of the Committee for this Commemoration,

J. L. B. Engelhard.
G. van Rijnberk.
D. Schoute.

Groningen, December 1938.
Secretariat: 63, Oostersingel.

NATIONAL LIBRARY OF PEIPING

The Secretary of the Association received the following letter:

Ever since Japan's military occupation of Peiping, all national institutions of learning in that historical city have been unable to function. In view of this situation, we have established an office

at Kunming, Yunnan. We have been collecting books and journals in order to meet the intellectual needs of Chinese scholars in this hour of distress. As many of our universities and scientific institutions have been deliberately destroyed by Japanese militarists, the need of scientific literature felt by Chinese scholars is especially urgent at the present time.

In order to keep Chinese scholars informed as to the recent development of various branches of science, we are building up a special Reprint Collection which will be of great value to investigators engaged in scientific research.

Knowing that your institution has made notable contributions to learning and cognizant of your intellectual sympathy for China, we earnestly hope that you will find it possible to ask each member of your scientific staff to send us a complete set of his reprints if they are still available for distribution.

As we have to start our work entirely afresh, we are in urgent need of books and periodicals of all kinds, old or new, especially standard works in various fields. Donations of books from American and Canadian authors may be sent to us care of the International Exchange Service, Smithsonian Institution, Washington, D. C., which makes monthly shipment to China. Should any of your friends be willing to lend a helping hand in the rehabilitation of our collections, will you kindly make the necessary contact for us?

As a great deal of scientific work is being carried on in China in spite of the war, your contributions will render a great service to the present and future generations of intellectual workers in this country.

Thanking you in anticipation for your kind co-operation and assistance,

Yours faithfully,

T. L. YUAN,
Acting Director.

The Association and the Johns Hopkins Institute of the History of Medicine will send in all their publications and the members of the Association are urged to do the same in order to help the Chinese people in their heroic struggle for scientific research in spite of ruthless Japanese aggression.